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No. 26

NUTRIENT TONNAGE DOWN

Fertilizer Consumption Decreases in 1955-56

The consumption of fertilizers in the U.S. and territories (Hawaii and Puerto Rico) in the year ended June 30, 1956, amounted to 22,193,070 tons. This was a decrease of 533,392 tons from the quantity (22,726,462 tons) used in the preceding year.

The 1955-56 consumption of fertilizers comprised 21,403,465 tons of products containing one or more of the primary plant nutrients (N, P₂O₅, K₂O), and 789,605 tons of the secondary and trace nutrient materials which did not contain these nutrients. The quantity of products containing primary nutrients was 31,391 tons (2.42%) below that (21,348,56 tons) in 1954-55. The consumption of materials that did not contain primary nutrients was 2,001 tons (0.25%) below the quantity (791,606 tons) used in the preceding year.

Fertilizers used in 1955-56 contained 6,054,741 tons of nitrogen, available P₂O₅, and K₂O, or 64,398 tons (1.05%) less than in 1954-55. This was the first time in 17 consecutive years that the total consumption of primary nutrients failed to increase.

The use of nitrogen decreased 27,83 tons (1.42%) to 1,932,603 tons, that of available P₂O₅ 36,240 tons (1.59%) to 2,247,420 tons, and that of K₂O 225 tons (0.01%) to 1,874,718 tons. The amount of total P₂O₅ in-

(Continued on page 18)

General Chemical's New Mississippi Plant in Operation

NEW YORK—A new plant for production of cotton insecticides, located at Cleveland, Miss., is now in operation. General Chemical Division, Allied Chemical & Dye Corp., has announced. The plant, which is known as Delta Works, will utilize special new equipment designed by General Chemical's engineering department to materially increase the company's output of cotton pesticides, the firm said.

The new location will formulate all types of cotton dusts including various combinations of DDT, BHC, calcium arsenate, aldrin, dieldrin, endrin, ethyl and methyl parathion, malathion and toxaphene. A full range of liquid cotton pesticides will also be produced. A company spokesman said that Delta Works also has extensive warehouse facilities for stocking General Chemical's full line of insecticides.

The Cleveland plant is the fifth General Chemical location producing cotton insecticides and basic toxicants. Other plants are at New Orleans, Baltimore, Marcus Hook, Pa. and El Segundo, Cal.

EDITOR'S NOTE: This is the complete report of Commercial Fertilizers and Primary Plant Nutrients Consumption in the U.S. for the year ended June 30, 1956, as released recently by the U.S. Department of Agriculture. Highlights of the report appeared on page 1 of the June 24 issue of Croplife. The report was prepared by Walter Scholl, Hilda M. Wallace, Esther I. Fox and Florence B. Crammatte, Fertilizer and Agricultural Lime Section, Soil and Water Conservation Research Division, Agricultural Research Service, USDA, Beltsville, Md.

Southern States Buys Facilities Of Virginia Co-op

RICHMOND, VA.—Southern States Cooperative, with headquarters in Richmond, has announced completion of negotiations for purchase of the fertilizer manufacturing facilities of Southwest Virginia Co-operative, located just north of Bristol, Va. The purchase price was \$450,000, SSC told its members, and possession was given as of July 1.

The announcement said Southern States plans to spend from \$200,000 to \$250,000 in expansion of the new property to almost double its present annual capacity of 20,000 tons of mixed fertilizer. The new construction is to begin as soon as plans can be drawn and contracts let.

Use of liquid nitrogen in areas served by SSC is growing rapidly, the co-op reported to its members. Some eighteen local Southern States agencies in Virginia and Maryland are now handling liquid N, the co-op stated.

400 See Demonstration of Fertilizer Technology at TVA Development Center

MUSCLE SHOALS, ALA.—About 400 representatives of the fertilizer industry from 33 states and territories and three foreign countries gathered here June 18-20 for demonstrations of new fertilizer technology by the Tennessee Valley Authority's Fertilizer - Munitions Development Center.

Industry representatives included manufacturers of fertilizers and of fertilizer-making equipment and wholesale and retail distributors.

Brig. Gen. Herbert D. Vogel, TVA chairman, told the group that results of fertilizer research conducted at the center are available to the fertilizer industry without charge, and he invited the representatives to visit the facilities frequently.

California Waging War on Spreading Hopper Outbreak

— More Insect Notes on Page 4 —

SACRAMENTO—In temperatures well over the 100° mark, California waged war on two fronts against a spreading grasshopper plague that has ravaged hundreds of thousands of acres.

The invasion, which began when millions of the insects started hatching from last year's eggs, has already covered nearly 500,000 acres of range-land and orchards in Butte, Tehama, and Glenn counties. In addition, the hungry insects invaded nearly 7,000 acres in the Santa Maria Valley in Santa Barbara County.

In the northern area, Robert Harper, chief of the California Bureau of Entomology, and N. O. Berry, U.S. Department of Agriculture entomologist, made a fast survey of the stricken counties and laid plans to provide a fleet of motorized blowers to spray poison.

Damage figures in the three-county northern area already are near the \$1,000,000 mark.

In the Santa Barbara area, highway engineers were forced to close the main north-south U.S. Highway 101 while planes sprayed a 10-mile section with insecticide. James Jones, agricultural inspector, said it was the worst grasshopper outbreak in that area in recent years. He said farmers in the Los Alamos area estimated crop damage at \$100,000.

National Potash Mine Closed by Strike

NEW YORK — National Potash Co.'s Carlsbad, N.M., mine was closed beginning June 3 by a strike of members of the United Stone and Allied Products Workers of America (AFL-CIO). The company stated that the strike was the result of failure to reach agreement on certain non-economic matters.

Six pilot plant demonstrations, each preceded by a technical briefing, were held. They were under the direction of Charles H. Young, manager of chemical engineering; J. H. Walthall, director of the division of chemical development, and T. P. Hignett, chief of the development branch.

Demonstrations included: Use of diammonium phosphate in making 12-24-12, production of 5-20-20 using phosphoric acid containing 76% P₂O₅, production of superphosphates suitable for immediate ammoniation, production of ammonium phosphate-nitrates (8-16-32), production of nitric phosphate and production of granular superphosphates by a continuous one-step process.

6 Potash Firms Resign Plant Food Institute

—NPFI Statement on Page 7—

WASHINGTON—Six potash companies have sent letters of resignation to the National Plant Food Institute. This action was in accordance with earlier declarations that they would withdraw from the NPFI if the latter's expansion plan and its accompanying dues structure were voted by the remainder of the Institute's membership. The plan was adopted by the Institute at the group's annual meeting June 10.

The six resigning firms, all members of the American Potash Institute, are: American Potash and Chemical Corp.; Duval Sulphur & Potash Co.; National Potash Co.; Potash Company of America; Southwest Potash Corp.; and U.S. Potash Co., division of U.S. Borax & Chemical Corp.

Spokesmen from the withdrawing companies emphasized that the move was made without incrimination.

A committee appointed by the NPFI's executive committee is to make a thorough study of the dues situation, the matter over which the division came, to determine whether any inequities exist. (Croplife issues of June 17 and 24, page 1.)

John A. Miller, Price Chemical Co., Louisville, Ky., newly-elected president of the Institute, issued a statement on June 20 appealing to the six potash companies to accept the new dues structure for the Institute's 1957-58 fiscal year, pending the committee's study.

The situation was first brought to light publicly during the NPFI business meeting at the Greenbrier Hotel, June 10. At that time, following the Institute's outlining plans for an expanded educational and demonstration program, J. Fred Coope, president of the Potash Company of America, read a prepared statement which declared the intention of six companies to resign if the program, with its higher dues structure, were voted. (Text of Mr. Coope's statement in Croplife, June 17, page 21.)

Illinois Co-op Plant Installing New Process

EAST ST. LOUIS, ILL.—The Illinois Farm Supply Co. plant here is changing over to a new process that combines calcium metaphosphate into a granular mixed fertilizer. The co-op said that the process, developed by James Seymour, one of its chemists, increases the water-soluble phosphate in the fertilizer. The co-op has applied for patents on the process.

Illinois Farm Supply is one of the 16 regional cooperatives which own Central Farmers Fertilizer Co., currently erecting a \$7½ million plant in Idaho to produce calcium metaphosphate.

Mosquitoes, Flies Lead Household's Unpopularity Poll

WASHINGTON—A recent tabulation by the U.S. Department of Agriculture from reports by 33 states points up the nationwide problem of mosquitoes, house flies and other insect pests of man, his household and his livestock.

About three fourths of the states reporting listed mosquitoes and house flies among the most important household insects of 1956. Termites and other wood-attacking insects, fabric pests—especially carpet beetles and clothes moths—and cockroaches cropped up as highly annoying pests in more than half the state lists.

Several insects that normally live out of doors got into enough homes last year to become serious problems. Clover mites were among the top 10 household pests in 11 states, boxelder bugs in five and earwigs in five. These three insects do no harm to man, animals, household foods or furnishings, but can be a nuisance indoors. Pests of stored foods and grains also ranked high on unwanted-guest lists.

Regardless of how often they turn up at picnics, ants were listed by only eight states as a top household insect problem. Only three states named fleas and chiggers.

Horn flies, scourge of cattle and other livestock, were a No. 1 pest of farm animals in 16 states. Cattle grubs were named in 14 state lists, cattle lice in 14, and stable flies in 12. Ticks were harassing in seven states. Biting flies, pests of both man and beast, were also high on the list of livestock pests.

SCHOLARSHIP WINNER

PORTLAND, ORE.—David E. Duling of Maupin, Ore., is the winner of the \$100 scholarship in soils for the next year at Oregon State College. The scholarship is sponsored annually by the Pacific Northwest Plant Food Assn., and is also given to one student each at Washington State College and the University of Idaho. A committee from the association selected Mr. Duling after interviewing four candidates for the scholarship. This committee consisted of Paul Willard of Salem, William Chorlton of Portland and Don Campbell of Cornelius, Ore.

Herbert H. Schwardt Named Head of Cornell Entomology Department

ITHACA N.Y.—Dr. Herbert H. Schwardt has been appointed head of Cornell University's entomology department, W. I. Myers, dean of the State College of Agriculture announced recently. Dr. Schwardt, a member of the University faculty since 1938, succeeds Dr. Charles E. Palm who was recently named director of research for the State Colleges of Agriculture and Home Economics.

A native of Savonburg, Kansas, Dr. Schwardt, 54, received B.S., M.S. and Ph.D. degrees from Kansas State College. Before coming to Cornell, he was a junior entomologist for the U.S. Department of Agriculture in Arkansas and an assistant entomologist at the Arkansas Experiment Station. At Cornell, he was appointed assistant professor in 1939, associate professor in 1942, and professor of entomology in 1945. He was acting head of the department on several occasions.

North Central APS To Meet July 12-13

ST. PAUL—About 200 plant pathologists, agronomists and other agricultural workers will attend the summer meeting of the North Central Division of the American Phytopathological Society July 12-13 at the University of Minnesota.

The event will feature informal meetings and tours of field plots at the University's St. Paul campus and at the Rosemount Agricultural Experiment station, according to J. J. Christensen, head of the department of plant pathology and president of the north central division of APS.

On July 12, the group will observe research work in laboratories, greenhouses and in field plots at the University and then visit the Green Giant company at Le Sueur.

Field demonstrations at Rosemount July 13 will include melon, strawberry and potato research, cropping sequences, and world collections of oats, wheat, barley and flax.

JOINS ILLINOIS STAFF

ITHACA, N.Y.—Prof. Samuel R. Aldrich of the agronomy department at Cornell has accepted a position as extension professor of soil fertility at the University of Illinois.

New England Farms Face Heavy Losses Unless Rain Comes Soon

BOSTON—New England farmers are facing losses that could run into millions unless rain comes soon, state officials in the six state region said June 22.

In Massachusetts, Walter Piper, state agriculture department market expert, said the entire state needed an inch of steady rain. A one inch fall "would be a million dollar rain right now," he said.

The Massachusetts State Department of Public Health listed 14 communities where an emergency exists, seven others resorting to auxiliary water sources and 19 where residents have been asked to restrict water use voluntarily. Fully 100,000 acres of fruit and vegetable crops have been endangered by the prolonged drouth and about half of this Massachusetts acreage has insufficient irrigation or none at all, Mr. Piper said.

The drouth is costing Massachusetts farmers more than \$10,000 an hour, L. Roy Hawes, state agriculture commissioner, reported. "The situation is definitely going to get worse," he said. "Damage is amounting to a quarter of a million dollars for each 24 hours that we lack rain."

Charles F. Shelnut assistant state agriculture commissioner, reported that the state had lost one-third of its hay crop. He said onions, carrots, beets and small vegetables had been damaged.

Mr. Shelnut said rain would be needed for the state's second hay crop. Farmers who had harvested their first crop were not affected by the drouth, he said. The most severely hit area was Martha's Vineyard, according to Mr. Shelnut. He said the rainfall there had been between one half and three quarters of an inch since April.

James P. Margeson Retires from IMC

CHICAGO—James P. Margeson, a director and executive vice president of International Minerals & Chemical Corp., Chicago, retired June 30, after 17 years of service, in accordance with the company's retirement program. He also resigned from the board of directors. His responsibilities will thereafter be handled by T. M. Ware, administrative vice president.

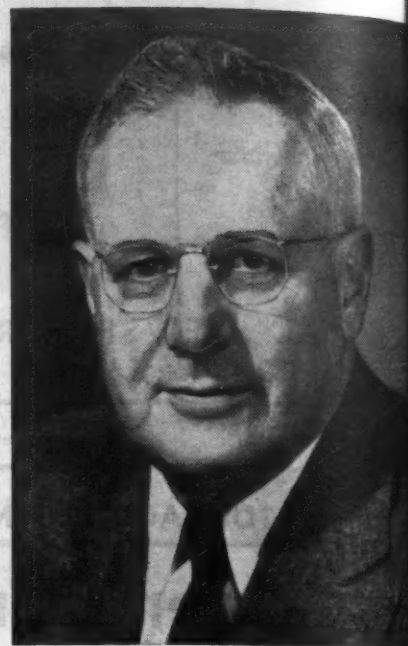
A native of Brookline, Mass., and a graduate in engineering from Dartmouth College, Mr. Margeson spent most of his career in the Midwest, and at one time he was a vice president of Marshall Field & Co., in charge of its manufacturing division.

He joined IMC in 1940 as assistant to the president and became a key figure in the corporation's growth from annual sales of \$12 million to more than \$100 million. He was a principal in planning the expansion of the company. He and his wife, who reside at the Homestead, Evanston, are planning to make their home on Cape Cod, at West Hartwich, Mass.

ESA Meeting to Accept Exhibits

WASHINGTON—Commercial exhibits will be accepted at the 1957 meeting of the Entomological Society of America, to be held at the Hotel Peabody in Memphis Dec. 2-5, R. H. Nelson, executive secretary, announced here last week. Interested firms should write to Harold B. Jones, chairman, exhibits committee, 2772 Natchez Lane, Memphis, for rates and other information.

H. M. Armitage, Sacramento, Cal., is president of the ESA, and his address at the convention will be entitled "Man in an Insect World." Dr. E. N. Woodbury, Hercules Powder Co., Wilmington, is chairman of the program committee.



James A. McConnell

CSC DIRECTOR—James A. McConnell has been elected a director of Commercial Solvents Corporation, it was announced June 25 by J. Albert Woods, president. Mr. McConnell is a director of the Lehigh Valley Railroad, the Farm Foundation and is chairman of the board of the foundation for American Agriculture. He recently resigned as U.S. assistant secretary of agriculture to accept a professorship of agricultural industry in the Graduate School of Business Administration at Cornell University, Ithaca, New York. For many years Mr. McConnell was associated with the Cooperative G.L.F. exchange, Inc., as general manager and later as executive vice president.

Kern County, California Distributors Organize

BAKERSFIELD, CAL.—Agricultural chemical and fertilizer distributors of Kern County, California recently held a luncheon meeting at Bakersfield Inn to organize the Kern Agricultural Chemical Assn.

Officers elected for the coming year were Fred R. Bryant, Brown & Bryant, Shafter, president; Everett Wingate, Agriform of Kern County, Inc., Wasco, vice president, and Herbert Denham, Ace Ammonia Service, Bakersfield, secretary-treasurer.

The announced purpose of the association is to promote a better understanding and relationship between the distributors and users of agricultural chemicals in Kern County.

The association is developing a program for the interchange of technical data and information and will conduct periodic classes to provide the training to member field representatives. This program will also include inducements through awards for scholastic achievements, to encourage youths of Kern County to consider the field of agricultural chemistry.

Georgia Field Days Planned in July

ATHENS GA.—A series of field days to be held on the farms of the Georgia pasture improvement winners has been set for July, J. R. Johnson, Georgia extension agronomist, announced last week.

The first tour is being made July 1 at the E. O. Cabiness farm in Oglethorpe County. The others will be July 9 at the A. C. Ewing farm in Newton County; July 11, the H. D. Barton farm in Thomas County, and on July 12, the Sam Neville farm in Bulloch County. The programs will be conducted by the extension service and sponsored by the Georgia Plant Food Educational Society.

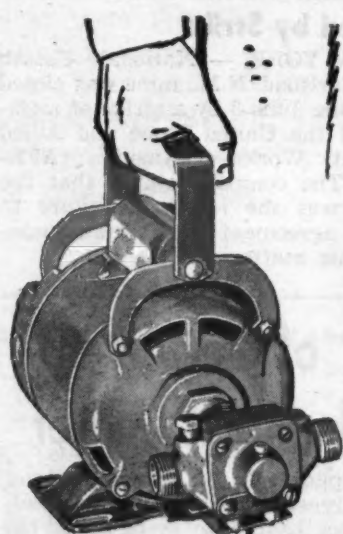
HORTICULTURE FIELD DAY
LEXINGTON, KY.—The annual Horticulture Field Day will be held at the Kentucky Experiment Station here July 16.

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Plans Announced for Enlarged Corn Contests in Colorado

FT. COLLINS, COL.—Spurred by results of corn growing contests in three Colorado counties last year, officials have announced plans to enlarge the competition.

In northeastern Colorado, corn growers will shoot for county and district honors in a contest that is getting underway this year. Competition will be open to farmers in Adams, Boulder, Larimer, Weld, Morgan, Washington, Logan and Sedgwick counties. The American Fertilizer and Chemical Co. will sponsor an achievement dinner for county winners and present awards to district winners.

A similar contest is being launched in five Arkansas Valley counties. Growers in Pueblo, Crowley, Otero, Prowers and Bent counties will be eligible to enter the race. Top corn and sorghum growers in the valley will be honored by sponsoring businesses and groups this fall.

Colorado State University, which is cooperating to sponsor the contests, also will recognize the top growers. According to Rodney Tucker, extension agronomist, the university will present certificates to farmers who produce 200 bu. of corn, or more, per acre in these official contests.

Interest in high corn yields mushroomed after officials totaled results of competition in Weld, Morgan and Logan counties in 1956. In those counties, 121 growers recorded average official yields of 142 bu. of corn per acre. These yields were attained on five-acre corn fields which were enrolled in the contests.

Mr. Tucker said that "the program is designed to spotlight the practices necessary to achieve high corn yields. The contests also focus attention on the role of corn in irrigated farming and call attention to the profit opportunities in high yields."

The contests have attracted interest from many groups and individuals. Sponsors of county contests include railroads, fertilizer handlers and distributors, seed growers and handlers, farm equipment companies, chambers of commerce, service clubs, farm organizations, bankers and feed handlers and dealers.

Stauffer's Trithion Registered by USDA

NEW YORK—Trithion, an organic phosphate insecticide and acaricide developed by Stauffer Chemical Co.'s research laboratories, has been granted registration by the U.S. Department of Agriculture for mite and insect control for non-residue uses on a number of crops. Hitherto the compound, which chemically is 0,0-Diethyl S-p-chlorophenylthiomethyl phosphorodithioate has been sold only on an experimental basis.

The new approval permits the use of Trithion for the control of mites, aphids and certain other insects on these crops: post harvest use on deciduous orchards—apple, peach, pear, plum, prune and nectarine; cotton; seed crops; beans (dry, shelled) and almonds.

Stauffer said that Trithion has a long residual effect and kills not only mites and aphids but also their eggs. A single application is effective for an extended period of time, the firm said.

TOMATO CROP

BEAUFORT, S.C.—The tomato crop in this truck-growing county appears good with the exception of damage from blight and excessive rain, and shipping is in full swing. Control of blight on the larger farms has apparently meant the difference between profit and loss in the 1957 crop. Farmers who did not spray their plants suffered practically a total loss.



Lawrence J. Munzenmaier

Lawrence J. Munzenmaier In New Du Pont Post

WILMINGTON, DEL.—Lawrence J. Munzenmaier, a specialist in turfgrass management, has been assigned to the Pacific Northwest (including northern California) as a sales representative for Du Pont's nitrogen products. His headquarters will be in Sacramento, Cal.

Mr. Munzenmaier will handle sales of "NuGreen" fertilizer compound, "Uramite" fertilizer compound, and "Two-Sixty-Two" feed compound, to the fertilizer and feed industries.

A native of Chicago, Mr. Munzenmaier received a degree in agronomy, and an M.A. degree in turfgrass management from Purdue University. He joined Du Pont in 1956.

WEED CONTROL BULLETIN

LARAMIE, WYO.—A new bulletin, recently published by the Wyoming Agricultural Experiment Station, gives the latest in the various methods of controlling weeds.

Crop, Range Prospects Good in Wyoming

CHEYENNE, WYO.—The state and federal departments of agriculture reported that "from a moisture standpoint" crop and range prospects in Wyoming are the most favorable since 1951.

The report said ranges and pastures are growing satisfactorily in all sections of the state, that moisture for growth is adequate and that irrigation water for meadows is generally sufficient for a good hay crop.

However, the report warns, "it will take more than moisture to erase the ravages of the past drouth and overgrazing."

There was very little crop damage from the weather reported—including several hail storms and flooding—or insects, but some flooding of fields occurred adjacent to the Greybull and Big Laramie rivers.

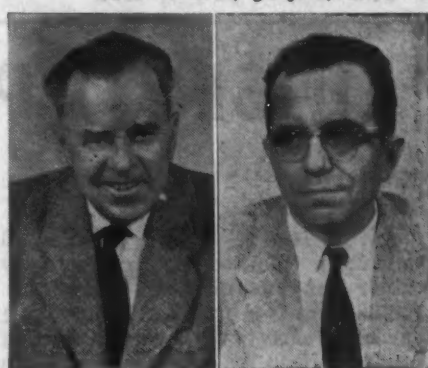
The departments also reported the index of prices received by Wyoming ranchers and farmers advanced 2% during the month ended May 15 and that the level was 6% higher than a year earlier.

The meat animal index declined 3% during the month, the feed grain and hay index declined 5%, dairy prices dropped 1% and poultry products dropped 2%.

Coastal Bermuda Fertilizer Rates Listed

ATHENS, GA.—A half-million acres of Coastal Bermuda grass are now growing in Georgia, and when general fertilizer recommendations are followed they will provide grazing for one cow per acre and furnish enough hay to carry that cow through the winter, J. R. Johnson, agronomist for the Georgia Agricultural Extension Service has reported.

Mr. Johnson said that fertilizer recommendations call for 500 lb. of 0-10-20 per acre in South Georgia or the same amount of 4-12-12 in North Georgia, applied in the spring. To get maximum production, 100 to 200 lb. of actual nitrogen should be used per acre.



A. J. Anderson Modesto L. Leonardi

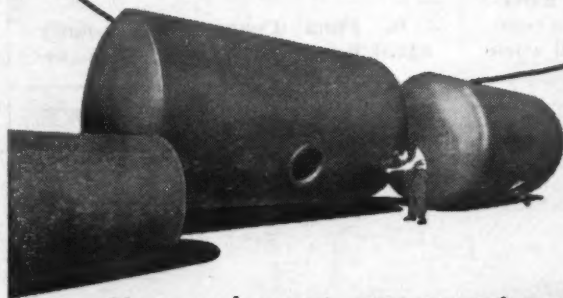
PRODUCTION MANAGER—Modesto L. Leonardi has been named as manager of plant production at American Potash & Chemical Corp.'s main plant at Trona, Cal., according to an announcement by Calvin L. Dickinson, director of manufacturing. Mr. Leonardi has been with American Potash & Chemical Corporation since 1939, after completing his education at the University of Nevada. A. J. Anderson, formerly manager of plant production, has been appointed advisory engineer for the Trona facility.

Aerial Spray Study Set for Nebraska

OMAHA, NEB.—The University of Nebraska Board of Regents has accepted a \$10,000 grant from the State Department of Aeronautics to continue research in aerial agricultural spraying. The research covers seeding and fertilizing from the air as well as the application of other agricultural chemicals by airplane.

Neal E. Shafer, assistant professor of agronomy who is directing the project, said that during the coming year it will include perfection of a weed-control program aimed at saving moisture and retarding wind and water erosion in the Panhandle area. Mr. Shafer said he thinks the aerial spraying program will reduce the number of tillage operations from eight to two, from April to September.

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INSECT, PLANT DISEASE NOTES

Corn Borers Expected In Iowa Fields

AMES, IOWA—It appears that all tall corn (planted before the May rains) has lots of corn borer eggs. Fields examined this week (June 22) varied greatly over the state. Egg counts ranged from 10 on small corn to 700 per 100 plants on tall corn. Leaf feeding is beginning to show up.

No grasshoppers were seen in alfalfa fields in Tama and Benton counties where small populations had been present 3 weeks ago. Disease, parasites or predators may have destroyed them. At Oskaloosa this week, hoppers averaged 20 per square yard. In Southeast Iowa, similar populations were seen. These are young differential hoppers.

One $\frac{3}{4}$ grown armyworm was found in the middle of a corn field in Delaware County. No worms were seen in oats or in brome in the fence-row.

Spittle bugs are now mostly adult. They are abundant in alfalfa fields. One field in Clayton County averaged 15-17 per sweep. The adults will feed on alfalfa, clover, weeds and other plants for another 6 weeks. Then they will lay eggs in the old stems of plants. The eggs will hatch next spring.

Pea aphid populations appear to be decreasing in northeast Iowa, averaging only 1 per sweep in Buchanan, Fayette and Clayton counties.—Harold Gunderson.

Grasshoppers Numerous But Do Little Damage

MANHATTAN, KANSAS—Counts of grasshoppers range from 10-50 in most of the roadside areas. The hatch of grasshopper eggs has been later than usual and no field damage has been found at the present time (June 15) but most of the weedy areas have enough grasshoppers to damage gardens and crops in midsummer. The first adult lesser migratory grasshoppers were found this week.

No spotted alfalfa aphids were found in northwestern counties this week. They can be found in southwestern Kansas counties, but not in large enough number to be a problem.

Pea aphids can be found in most alfalfa fields but are not causing serious damage. Variegated cutworms can still be found in a few field of alfalfa. The feeding of these cutworms delays the growth of the new cutting. Sprays of grasshopper control materials at twice the normal application should give control of the cutworms. Many garden and ornamental plants are being defoliated by this cutworm. The damage by variegated cutworms is leaf feeding rather than cutting plants at the ground level that is the usual cutworm damage.

Blister beetles have been reported from alfalfa fields. They usually concentrate in small areas and are especially damaging to the blossoms of alfalfa.—David L. Matthew and Dell E. Gates.

Varied Infestations Found in Maryland

COLLEGE PARK, MD.—Potato leafhoppers averaged from 1 to 3 per sweep on alfalfa in Central Maryland and on the Eastern Shore. They will probably increase from now on.

European corn borer infestations in sweet corn in the whorl stage averaged from 2 to 9% in Queen Anne County. Reports have been received of heavy numbers elsewhere. First brood egg laying appears to be over. Larvae of the southern cornstalk borer, which are more prominently spotted than European corn borer larvae, were found in the whorls of

field corn in Caroline County. Some corn earworms have been found in the ears of very early sweet corn in Queen Anne County. Thrips have been causing streaking of the leaves of field and sweet corn in all sections.

Mexican bean beetles and bean leaf beetles are damaging beans in most sections. Lima-bean vine borers have damaged garden beans in Caroline County. Hornworms were found on tomatoes in Queen Anne and on peppers in Caroline County. Tomato fruitworm has caused light damage to tomatoes in Queen Anne and Caroline counties. Imported cabbage worm butterflies are abundant in most sections. These will lay eggs on cabbage, broccoli, etc.

First brood hornworms are beginning to feed on tobacco in Southern Maryland. Hornworms moths are appearing in the light trap at Fairland. Flea beetles are heavy on newly set plants in Prince George's County.

In Caroline and Dorchester counties thrips are infesting soybeans, causing the lower leaves to drop. Japanese beetles are appearing on shrubbery in most counties. Apparently the hot weather last week produced quite an emergence. Mimosa webworms have begun to appear on mimosa trees in Calvert County.—Theo. L. Bissell and Wallace Harding.

Leafhoppers Reported Numerous in Missouri

COLUMBIA, MO.—Over most of the state, leafhopper numbers in alfalfa are extremely high. Varying amounts of yellowing are noticeable in most fields, and there is every indication this damage will increase considerably during the next couple of weeks.

From the Missouri River north, we are finding a good many fields of early corn which are heavily infested with European corn borer. Such fields should be checked immediately for borer leaf feeding scars. If about 75% or more of the stalks are showing these scars, spraying is justified. This is a job that can't be put off.

Corn ear worms are beginning to work in the whorls of the corn. Occasionally this damage is confused with that caused by other insects, but it's different from anything else to be found in corn at the present time.

Chinch bugs are beginning to move from small grains into corn and grain sorghums. This movement will continue during the coming week, (June 24) and all corn

and sorghum near small grain should be checked carefully for chinch bugs. If present, they will be plastered on the lower portions of the plants, or working in the lower leaf sheaths.

In some localities, grasshopper numbers are unbelievably heavy. There's not too much time left to spray out fence rows, but it's a job that should be done if many hoppers are noticed.

Over the state as a whole, hopper numbers are down this year. We may be fortunate and get enough moisture to keep grass and wasteland vegetation in good enough shape for hoppers to be content to feed there and not move into crops. But regardless of all this, there are going to be individual farms where the fence rows are now loaded with hoppers, where crop damage will be rough before the season is out . . . unless those fence rows are sprayed.—Stirling Kyd and Geo. W. Thomas.

Lygus in Threatening Numbers Reported

PHOENIX, ARIZ.—Cotton is growing nicely in most parts of the state although in some parts Lygus are high enough and injury great enough to justify controls. Some cotton leaf perforators are also showing up and farmers should watch their cotton very closely.

In Yuma County, Lygus counts are very high in fields on the Mesa, Yuma Valley and some parts of the northern and southern Gila Valleys. In the Roll-Wellton areas Lygus counts were not as high in either alfalfa or cotton fields. A few bollworms and bollworm moths were seen. Some fields of cotton should be dusted as high as 25 to 30 per 100 examined. The injury to the squares had been caused by Lygus. Some spider mites were also showing up.

Lygus bugs have increased in Pinal County. In most fields counts ranged from 8 to 14 Lygus per 100 sweeps, and occasionally ran as high as 26. Lygus nymphs showed up for the first time. The black fleahopper counts ran as high as 8 to 12 per 100 sweeps and an occasional stink bug, cotton leaf perforator, and bollworm were found in localized spots. Thrips still are around in large numbers. Predators were not quite as plentiful as in previous weeks but still quite a few are present. Ladybugs, lacewings, nabids and Orius were present in greatest numbers. (June 21)

In Pima County, the county agent reports thrips are still caus-

ing injury in the Sahuarita and Marana areas. Beet armyworms are also present in some areas. Thrips are blasting squares in many fields. Some showers fell in parts of the county during the middle of the week. USDA workers report that cotton is making good progress and is beginning to fruit well. Several incipient infestations of bollworms were found in a number of fields.

In Maricopa County, the assistant county agent reports cotton is making good progress with all April plantings setting fruit and many later fields flowering profusely. Both harmful and beneficial insects are building up in most areas. Adult Lygus are appearing in most sections indicating migration from other crops. In the Buckeye area, Lygus counts showed 2 to 17 per 100 sweeps. The counts in the Peoria-Beardsley district ranged from 0 to 72; at Laveen, 2 to 8; Kyrene 0 to 25; Chandler 0 to 48 and Mesa 2 to 16. Ordinarily a count of 8 to 10 Lygus per 100 sweeps warrants control.

Cotton fleahoppers and black fleahoppers are especially heavy in the eastern part of the county and around Laveen. Counts ran as high as 16 to 20 per 100 sweeps. Cabbage loopers, spider mites and armyworms along with bollworm moths and eggs were found in many fields. These fields also contain high populations of predators.—J. N. Roney.

Codling Moth Problem For Massachusetts

AMHERST, MASS.—This is the critical time for the control of codling moth. High temperatures, heavy showers and poor coverage in tops and centers of the trees are good reasons for shortening the interval between sprays to 10-12 days and for doing a better spray job.

Apple maggot season is at hand. Plymouth County reports that 4 maggot flies were found June 18 on an unsprayed apple tree. This is about the normal time for first maggot flies to emerge. Protection will not be necessary until 5-10% of the flies have emerged.

Earliest corn is now in a very favorable stage for corn borer and much mid-season corn has reached a susceptible stage. Earliest fields should receive a second treatment right away if not applied already.—C. J. Gilgut and O. C. Roberts.

Thrips Rather Than Boll Weevils Bother Cotton

KNOXVILLE, TENN.—Cotton appears to be in better shape this week all over West Tennessee due to the let up in rain. Few overwintered boll weevils have been found so far but some terminal growth injury has been found in some of the heavier infested fields.

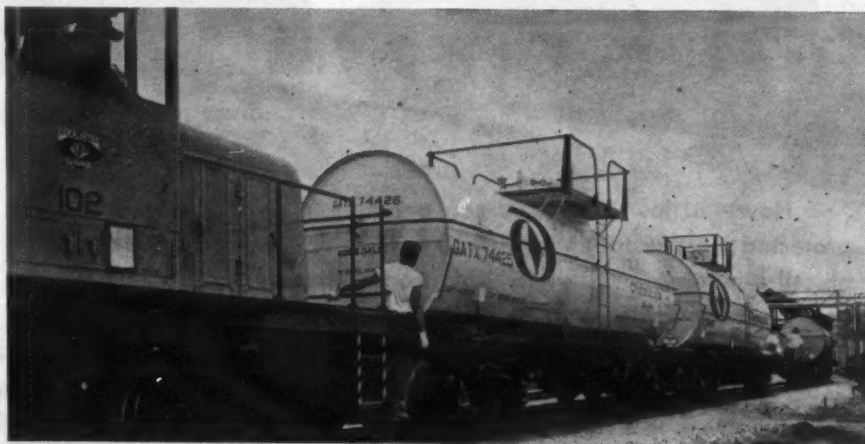
Thrips have increased to the point where some light injury is occurring all over the cotton growing area. Aphids have also increased with some spotted damage over West Tennessee.

Flea beetles are present in most fields but have caused very little damage so far. Flea hoppers are being found in low numbers over the area in the ranker cotton.—R. P. Mullett.

Development of Corn Borer Reported as Rapid

URBANA, ILL.—Development of corn borer has proceeded rapidly. Moth emergence is just about complete as far north as Route 6. In northwest Illinois emergence varies from 90 to 100%, and in northeast Illinois from 75 to 100%. Egg-laying should be completed the week of June 24 in the area up to Route 6 and by July 4 north of Route 6. This egg-laying may be extended slightly in northeastern Illinois, since borer development has been slowest in this area.

The situation in Central Illinois varies from locality to locality. In



NEW LOOK—Tank cars of Diamond Alkali Co., Cleveland, have a new look. Formerly painted black, with red-and-black horizontal diamond-shape trademark and white lettering, Diamond tank cars henceforth will feature the company's newly developed trademark in bright red and black and the Diamond Chemicals logotype in large block style lettering in black on a gull gray background, according to John H. Wilharm, Diamond director of traffic. Tank cars illustrated above, among those now in service at Diamond's Deer Park, Texas and Muscle Shoals, Alabama Plants, are the first in a fleet of nearly 1,000 units scheduled to be refinished as shown within the next two years. The cars, of from 4,000 to 10,000 gallons capacity each, are used for shipping Diamond chemicals for industry and agriculture from 15 plant locations in 10 states.

the western section of this area, some localities have a reasonable number of fields that will profit from treatment. In the eastern section, where very little corn was planted early, a lower percentage of fields are involved. Treatment time is here for those fields that are most advanced.

Concentrations of small grasshoppers were observed this past week in fencerows in central Illinois. These pests should be controlled while they are in the fencerows and before they have damaged crops.—H. B. Petty.

Grasshoppers Expected in South Dakota Area

COLLEGE STATION, S.D.—Grasshopper hatch is well underway, with light sandy soil areas in northeast showing up to 30 nymphs per square yard. Hoppers also hatching in the Black Hills.

European corn borer pupation is progressing rapidly with 60 to 75% of the borers pupated.

Cutworms are reported continuing to plague corn. Army cutworms are well distributed over the state, also. Many are full grown and pupating.

Alfalfa weevil, late this year, is doing little damage to first cutting. Feeding is just beginning to show up in Lawrence and Butte counties. Larvae are numerous but very small. Cutting the alfalfa will put most of them out of commission.

Corn billbugs and clay colored billbugs continue to damage corn in low poorly drained spots. Blister beetles are showing up in good numbers on alfalfa, and Lygus bugs are increasing very rapidly. Counts up to 4 bugs per sweep common.

Pests of trees such as cankerworms and aphids continue to be abundant. Spiny elm caterpillars showing up on Chinese and American elm. Tent caterpillars reported from Meade county.—John A. Lofgren.

Plant Diseases Feature

Virginia Report

BLACKSBURG, VA.—Bluemold has been generally prevalent throughout the flue-cured tobacco area this year, but use of chemicals prevented serious damage and enough plants are available, says S. B. Fenne, plant pathologist at Virginia Polytechnic Institute.

He says some anthracnose also was found, but where spraying or dusting for bluemold was properly done, anthracnose was also controlled.

Damping-off was reported this season in several plant beds, particularly in low, wet beds that were not properly drained and where there was not enough sunlight.

The most common tobacco disease, particularly in the field, was caused by pythium. In many fields pythium caused the death of numerous plants, and some fields had to be replanted three and four times.

Serious Threat of Boll Weevil Seen

CLEMSON, S.C. — (June 17) — In view of the serious boll weevil threat facing cotton growers of the state, the Clemson Extension Cotton Committee has cautioned growers that they must act promptly to rid their fields of adult weevils.

According to reports from county agents, the unfavorable weather of the past week has greatly intensified the boll weevil threat. Wet fields have made it difficult for farmers to apply the recommended insecticides. The rains have also delayed farmers in their efforts to save their grain and to rid their fields of grass.

The agents report, however, that in spite of these handicaps many farmers applied insecticides during the week and found them effective.

The reports indicate that cotton is growing nicely in stages varying from the early square stage in some

fields to the full-bloom stage in other fields. The committee points out that this is a very critical period in weevil control. If fields are to be cleared of adult weevils before they lay eggs in the rapidly forming fruit, the insecticides must be applied promptly.

Where insecticides are washed off the cotton by rains within 24 hours after being applied the application should be repeated, growers are advised.

Aphids Infest Many Gardens in Nebraska

LINCOLN, NEB.—Nebraska gardeners are experiencing the greatest aphid invasion of their ornamental and vegetable gardens in recent years, Robert E. Roselle, extension entomologist at the University of Nebraska, has reported.

Weather conditions have been favorable for aphids and unfavorable for their natural enemies, he pointed out.

General Increase Noted For Pests and Diseases

VINCENNES, IND. (June 25) — The possibility of scab infections spreading continues to be the major problem in Indiana orchards. A complete fungicide program will be needed in most orchards for the remainder of the season.

There has been a general increase in European red mite activity during the above period in commercial orchards in this area.

In experimental plots egg forms were very numerous on June 25 in unsprayed plots and most other plots where miticides were applied prior to bloom, indicating that activity will increase sharply during the next 10 days. Populations of two-spotted spider mites on apples are not generally high enough to warrant control measures at this time.

First brood codling moth adults started emerging in the insectary on June 24. In the orchard emergence of

adults from overwintering larvae is about complete, although an occasional adult is still found. First-brood adult activity in orchards will likely lag behind that in the insectary but protection should be continued since the two broods will overlap. One grower near LaPorte, Ind. (northern Indiana) reports codling moth activity near the packing shed where first brood emergence is still in progress. —D. W. Hamilton.

North Carolina Pests Expand Activities

RALEIGH, N.C. — (Via Western Union June 27)—Japanese beetles are doing moderate to severe damage to crops and ornamental planting in the Coastal Plains and Piedmont areas, but no report of damage from the mountains has been received yet. Fleas are more numerous in and around homes throughout the state this year than ever before. Ants, roaches, slugs and millipedes are

(Continued on page 21)

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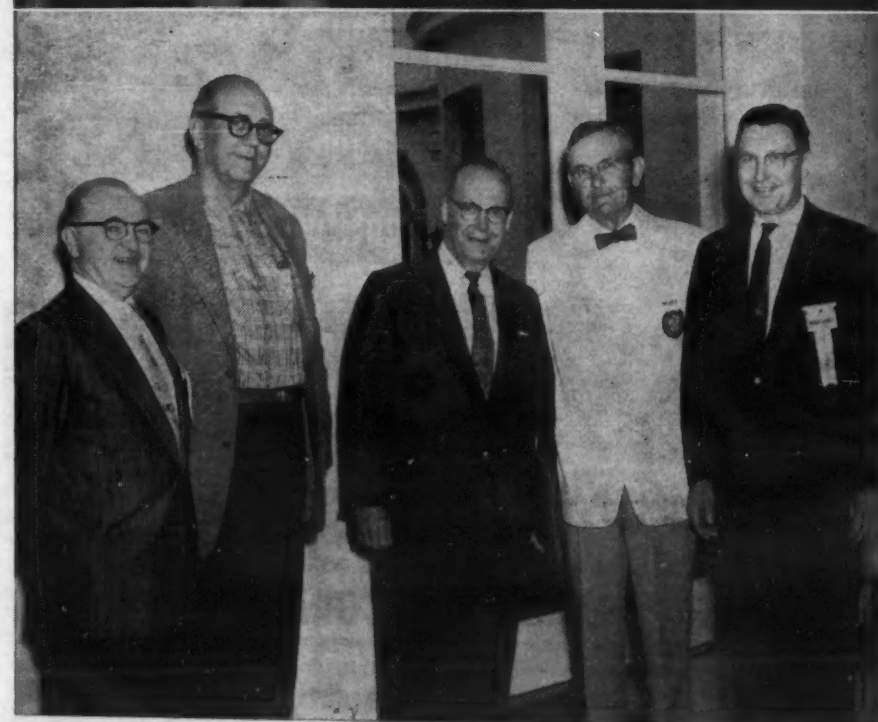
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Camera Views at Meeting of National Plant Food Institute

AT NATIONAL PLANT FOOD INSTITUTE MEETING—Top names in the fertilizer trade were found at the annual NPFI convention at the Greenbrier Hotel, White Sulphur Springs, W. Va., June 9-12. Top row, left to right Dr. Vincent Sauchelli, outgoing chairman of the research and education committee of the Institute is shown with A. H. Bowers, Swift & Co., Chicago, new chairman and Dr. W. H. Garman, Institute staff member, who serves as permanent secretary of the committee. Center photo: Paul T. Truitt, executive vice president of the Institute, C. T. Prindeville, vice president of Swift & Co., Chicago and newly-elected chairman of the NPFI board of directors; and Dr. Russell Coleman, executive vice president of the NPFI. Last photo: Russell White, Stauffer Chemical Co., San Francisco looks on as Dr. R. P. Thomas, International Minerals & Chemical Corp. (center) is congratulated by Dr. Myron Keim, Virginia-Carolina Chemical Corp., Richmond, Va.

At left, top photo: Nine of the 14 new members of the Institute's board of directors elected at the meeting. Left to right, back row: Thomas M. Ware, administrative vice president of International Minerals & Chemical Corp., Chicago, Ill.; John L. Christian, vice president, Monsanto Chemical Co., inorganic chemicals division, St. Louis, Mo.; A. W. Mohr, president, California Spray-Chemical Corp., Richmond, Cal.; Robert U. Haslanger, president, Escambia Chemical Corp., New York; Charles W. Baldwin, general manager of sales, United States Steel Corp., New York; T. F. Bridgers, president, Farmers Cotton Oil Co., Wilson, N.C.; and (front row) D. H. Banks, partner, Banks Fertilizer Co., Matthews, S.C.; L. G. Black, president, Ark-Mo Plant Food Co., Corning, Ark.; and James E. Totman, president, Summers Fertilizer Co. and Northern Chemical Industries, Inc., Baltimore, Md. They were elected at the annual meeting of the Institute held at the Greenbrier on June 10.

Second photo (left to right): Dr. Werner L. Nelson, American Potash Institute, new chairman of the farm management and economics division of NPFI; Mr. Bowers; Dr. Thomas, new chairman of the agronomy and horticulture division; Dr. Garman; and Joe Sharp, Spencer Chemical Co., Kansas City, Mo., new chairman of the fertilizer technology division. Dr. Proctor Gull, Spencer Chemical Co. who was named vice chairman of the research and education committee, was not present when the picture was taken.

Across bottom, at left: Sam L. Nevins, vice president, Olin Mathieson Chemical Corp., Little Rock, Ark.; Maurice H. Lockwood, vice president, International Minerals & Chemical Corp., Chicago; Sen. Karl E. Mundt, (R., S.D.) who addressed the NPFI convention in its session of June 11; Weller Noble, Berkeley, Cal.; and Clyde T. Marshall, Commercial Solvents Corp., New York. Bottom right: Carroll P. Streeter, editor of Farm Journal, and Bill Kennedy, editor of the Georgia Farmer, admire their soil builders awards as Mr. Prindeville looks on. A complete report of the convention appeared in the June 17 issue of Croplife. Photos courtesy of the National Plant Food Institute.



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National Plant Food Institute Issues Statement on Program

WASHINGTON—The National Plant Food Institute, commenting on its policy concerning the new program for expansion of the fertilizer market, made the following statement last week:

The membership of the National Plant Food Institute, at its annual business meeting at White Sulphur Springs, W.Va., on June 10, approved a program to intensify efforts of the Institute aimed toward expanding the fertilizer market, and voted enabling amendments to the by-laws to permit the program to be initiated. The program had been recommended by the board of directors after more than a year of study of opportunities for market expansion.

The plan envisions a vastly expanded program by the Institute in the fields of research, farm demonstrations, education and promotion which eventually will require a budget approximately double the current level. The first step toward this goal was authorized by the board of directors in their meeting on June 12. This consisted of approval for 1957-58 of a budget roughly one half again as large as the 1956-57 budget, together with an increase in dues sufficient to support the higher budget.

The enabling amendments approved by the membership place a new maximum dues rate of 1/2 of 1% of net sales on nitrogen, phosphate rock, superphosphates, potash and sulfur produced or imported and sold as such for plant food use in the U.S. The maximum dues rate for mixed fertilizer and other fertilizer materials was left unchanged, as was the current minimum of \$100 per year.

To finance the first step in the expanded program, the board authorized an increase in dues on the basic materials as indicated above, from 1/20 of 1% to 3/20 of 1% of net sales. Dues for all other plant food materials and mixed fertilizers will remain at the current level of 1/20 of 1% of net sales.

In commenting on the program, John A. Miller, newly-elected insti-

tute president, stated, "I feel sure that this move toward a program to expand fertilizer consumption is a wise one. We hope that all present members of the National Plant Food Institute will support it and help in developing the program."

Designed to increase fertilizer consumption in line with recommendations of agricultural authorities, the program contemplates the establishment of four regional offices to permit intensified and continuous work at local levels. Tentatively selected locations for regional offices are Atlanta, Chicago, and San Francisco. The location for the northeastern office is as yet undecided. The goal will be to work out "custom tailored" programs to suit each fertilizer-using area.

"It is our sincere hope," stated Mr. Miller, "that the entire industry will join with us in this important program designed for the mutual benefit of the fertilizer industry and the American farmer. Most of the nitrogen and phosphate producers have already agreed to support the expanded program at the increased dues rate. A number of the potash companies feel that the dues structure is inequitable as it applies to potash because they, as members of The American Potash Institute, already are paying a substantial amount into that organization."

"In this connection the board of directors authorized the president to appoint a committee to evaluate the total dues structure of the Institute to determine if any inequities exist. Members of the board stated that they would like to see all potash companies continue their membership in the Institute for at least a year, pending the study of the dues structure."

PEACH CROP

COLUMBIA, S.C.—A five-million-bushel peach crop is forecast by the State Crop Reporting Service for South Carolina this season, 650,000 bu. more than last year's crop.

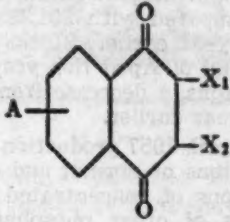


MISSOURI COUNCIL LEADERS—Officers and directors of the Soil Fertility & Plant Nutrition Council of Missouri paused during their recent meeting at the University of Missouri in Columbia to pose for this picture. From left to right are Austin Mount, Davison Chemical Co., Joplin, vice president; Tate Sweeney, Darling & Co., Marshall, director; J. H. Gille, Phillips Petroleum Co., Kansas City, retiring president and director; Richard Balser, Spencer Chemical Co., Kansas City, secretary-treasurer; Dr. Victor Sheldon, Olin Mathieson Chemical Corp., St. Louis, director; B. B. Mainord, Farm Bureau Service Co. of Missouri, New Florence, new president, and John Falloon, soils extension specialist, University of Missouri, honorary board member. Directors not shown include Jake Jacob, Missouri Plant Food, Sikeston; Bob Weiss, Virginia-Carolina Chemical Corp., St. Louis, and Frank Hoffman, Hoffman & Reed, Trenton, all new directors. The sign is one of 200 the council has provided for county agents in the state. A story of the meeting appears on page 1 of the June 17 issue of Croplife.

Industry Patents and Trademarks

2,796,377

Fungicidal Compositions and Method of Using Same. Patent issued June 18 to Mario Scalera and Tsai H. Chao, Somerville, N.J., assignors to American Cyanamid Co., New York. A fungicidal composition comprising an inert carrier and a minor but effective amount of a 2,3-bis (thiocyano)-1,4-naphthoquinone represented by the formula:



wherein X₁ and X₂ are selected from the group consisting of thiocyanate and thiocyanomethyl radicals and A is selected from the group consisting of hydrogen and a nitro radical.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Certrex, in capital letters, for insecticides, herbicides, fungicides, and solvents. Filed April 20, 1956, by Socony Mobil Oil Co., Inc., New York. First use March 15, 1956.

Homar Agricultural Chemicals, hand lettered design within circle, for insecticides, herbicides and fungicides. Filed Oct. 12, 1956, by Homar Agricultural Chemicals, Wichita, Kansas. First use on or about March 1, 1955.

Methar, in capital letters, for crab-

grass killer. Filed Oct. 18, 1956, by W. A. Cleary Corp., New Brunswick, N.J. First use July 6, 1955.

Delphene, in heavy capital letters, for insect repellent. Filed Jan. 22, 1957 by Hercules Powder Co., Wilmington, Del. First use Sept. 18, 1956.

Terra-N-Zyme, in hand-lettered design, for organic fertilizers. Filed July 19, 1956, by Roy E. Hoover, doing business as Hoover Soil Service, Gilman, Ill. First use March 1, 1956.

South Carolina Tobacco Crop in Good Condition

LAKE CITY, S.C.—South Carolina's tobacco crop is generally in excellent condition and is the most promising in recent years, reports from the tobacco belt indicate.

Scattered reports indicate that black shank or other diseases have affected some fields in Dillon, Horry and Marion counties, but with normal growing conditions during the next four weeks the good quality crop will yield above 1,500 lb. per acre.

DUSTING PILOT KILLED

OSBORNE, KANSAS—Doyle Chester Dillon, of Mankato, Kansas, 39-year-old crop dusting pilot, was killed in the crash of his single engine aircraft on a farm near here. The Osborne County sheriff's office said there were no witnesses to the crash.

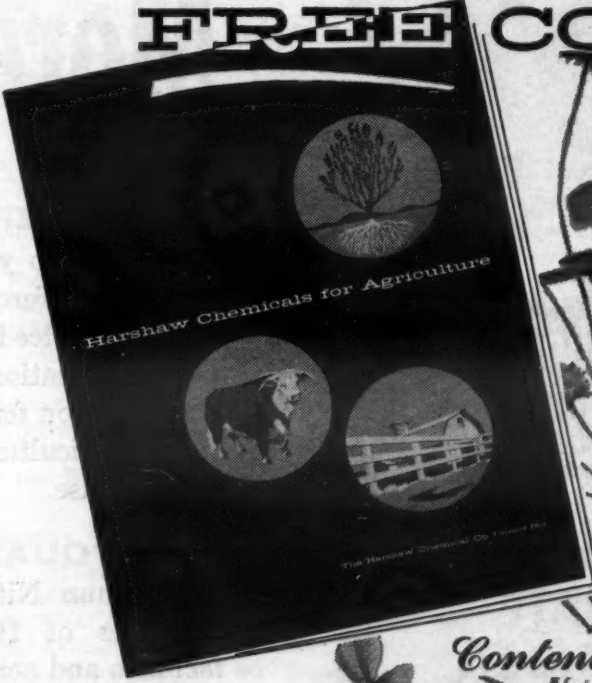
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Contents

	Page
Facts About The Harshaw Chemical Company . . .	2
Aerial View—General Offices & Research Laboratories .	4
Essential Trace Elements in Plant & Animal Nutrition .	5
Trace Mineral Compounds	9
Fungicides	12
Weed Killers	14
Miscellaneous Agricultural Compounds	15
Available Literature	16
Supplementary Reading	16
Location of Sales Offices and Warehouses	17

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E. W. Constable Heads Southern Control Officials

BIRMINGHAM—Dr. E. W. Constable, state chemist, North Carolina Department of Agriculture, Raleigh, was elected president of the Association of Southern Feed and Fertilizer Control Officials at the 15th annual convention of the group held here June 17-19. In attendance were 39 members of the association and 36 industry representatives.

Other new officers are Bruce Cloaninger, director, Department of Feed and Fertilizer Inspection and Analysis, Clemson, S.C., vice president, and Bruce Poundstone, head of the Department of Feed and Fertilizer, Lexington, Ky., secretary-treasurer.

Members of the Executive Committee include the above officers; R. W. Ludwick, State College, N.M., retiring president; Maurice Rowe, Richmond, Va.; L. C. Jacobs, Nash-

ville, Tenn.; Frank Fudge, College Station, Texas, and F. S. Carr, Atlanta.

Next year's meeting will be held during June in Atlanta.

April Super Output Down from Year Earlier

WASHINGTON—Production of superphosphate and other phosphatic fertilizers during April totaled 224,997 tons, a reduction from 241,236 tons in April, 1956, the U.S. Department of Commerce has reported. April shipments amounted to 224,048 tons, compared with 201,338 tons in April a year earlier. Stocks on hand at the end of April this year totaled 234,994 tons, a decrease from 292,981 tons a year earlier.

The April, 1957 production included 139,915 tons of normal and enriched, 61,337 tons of concentrated and 23,745 tons of other phosphatic fertilizers, including wet-base goods.

Insecticide Hearings Held in California

SACRAMENTO—The California Department of Agriculture held hearings June 26 in Los Angeles and June 27 in Sacramento to consider the proposed classification of two new insecticides among the "injurious materials" which require special permits for use.

The insecticides are Guthion and Chipman 6199, both phosphorus chemicals. Three arsenicals and seven organic phosphorus compounds already are classified as "injurious materials."

BUR, FERTILIZER TESTS

LUBBOCK, TEXAS—In Texas A&M tests here four tons of burs failed to increase cotton yields in the first year after application, but four tons of burs with 30 lb. and 45 lb. of nitrogen produced increases in cotton yields of 75 lb. and 100 lb. of lint, respectively.



BEARD EMPLOYEES HONORED

—More than 100 employees of the B. Beard Co., Inc., Shreveport, La. were honored recently with award dinners where gold service emblems were presented to commemorate five year service anniversaries with the company. Ed Bartles, who has been a plant supervisor at Beard since he joined the company 35 years ago, received his diamond studded service emblem from C. N. "Red" Wibben, former vice president who retired a few months ago after 32 years of service. Looking on is J. Pat Beard, president, who received his 25-year pin at the dinner. More than 70 years of service were represented by the employees attending.

Winners Announced In CFA Essay Contest

SAN MARINO, CAL.—James Burns, a student of vocational agriculture at the C. W. Pierce Junior College, Canoga Park, Cal., has been named by a panel of judges the winner of the \$100 cash grand award in the 1957 California fertilizer essay contest. The sponsor of this annual contest is the soil improvement committee of the California Fertilizer Assn. Competition is open to all regular students of vocational agriculture in California's two year junior colleges. The title of the 1957 contest was "Use of Fertilizer on Field or Vegetable Crops." In addition to the cash award to Mr. Burns, Pierce Junior College will have possession of the trophy of the Soil Improvement Committee, for the ensuing year.

A cash prize of \$25 is being sent to the author of the essay judged best from those submitted from each other school participating in the contest. The 1957 winners of cash awards in this category were: Hugh Davis, Chaffey College, Ontario; Robert E. Holden, Fullerton Junior College, Fullerton; Ray Meyer, Mt. San Antonio College, Pomona; Darrall Jackson, Orange Coast College, Costa Mesa; Ronald Shipman, Reedley College, Reedley; and Frank C. Davis, Ventura College, Ventura.

DUSTER IN ISRAEL

MENDOTA, CAL.—A former flier turned school teacher here, has left for Israel to teach pilots in that eastern Mediterranean country how to fly crop dusting planes. Raymond H. Fugate, 41, shop teacher at Mendota's McCabe Elementary School, will instruct Israeli army pilots how American fliers spread insecticides and other chemicals from low flying air planes. Mr. Fugate reported that nearly two million dollars worth of cotton crops have already been lost in Israel. He is spending about two months in Israel, and then will return to Mendota where he expects to go to work again as a crop duster.

NEW QUARANTINE STATION

SACRAMENTO—The Bureau of Plant Quarantine, California Department of Agriculture, is opening a new state plant quarantine inspection station near Twentynine Palms in San Bernardino County. The purpose of the inspection station is to intercept fruits, plants, or plant material which might be carrying agricultural pests or plant diseases.



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TAMPA, FLA.—3737 Neptune St.
TULSA, OKLA.—1708 Utica Square
WICHITA, KANSAS—501 KFH Building

BELIEVES IN PRODUCT

Field Testing Helps Merchant Register 100% Sales Increase

By JESS F. BLAIR
Croplife Special Writer

More than a year ago Croplife published an article about C. V. Ball of Lamesa, Texas, who had fertilized 6,000 acres with custom spreaders. This seemed like a good business, especially since it had been started as a sideline to his farm implement sales.

Mr. Ball expected a slight increase in business during 1956, but never figured on a 100% increase.

Yet that is what he got, because the end of the fertilizing season showed that his tractor-spreaders had covered 12,000 acres.

Several new factors have been responsible for this increase, and they can be listed numerically.

1. Methods of selling the product.

Mr. Ball never took anyone's word for anything about fertilizer, not even when it had been proven at experimental stations.

"I wanted to see what it would do here in this area, on these soils farmed by local farmers. So first, we put out a lot of test plots at our own expense. These were on regular farms and cultivated by the owners. We tried anhydrous ammonia and phosphorus fertilizer in varying amounts. Before long we knew how much to use and what it would do.

"Another good point about doing experimental work with the farm owner, if he makes money then he will tell everyone else."

2. Getting enough equipment to do the work.

The C. V. Ball Implement Co. now has a \$56,000 investment in tanks, tractors, spreaders and other equipment. Much new equipment was bought this year but it is paying itself out.

Mr. Ball now has 12 1,000-gal. anhydrous ammonia tanks that can be carried to the field, and he has 20,000 gal. of stationary storage. He has four tractors with a 100-gal. tank on either side and equipment for spreading both anhydrous ammonia and dry fertilizer at the same time.

"It's a temptation to take your profits and put them in the bank," Mr. Ball said, "but with a growing business, this doesn't seem practical. The days of little shoestring

businesses are just about over in this area."

3. Keeping up with the work. Since his business has spread to three counties, routing the tractors and tanks requires careful planning. Knowing the area helps eliminate false moves and delays.

4. Handling personnel. This year Mr. Ball tried a different type of payment to employees. He eliminated all overtime and added instead a bonus based on amount of work done. His two regular drivers got a regular salary, then at the end of the fertilizing season one of them drew \$500 and the other man got \$1,000.

"This keeps down clock-watching," Mr. Ball says, "and gives the men an interest in the business. Several times out on jobs they put in 12 or 14 hours a day at their own insistence."

5. Keeping up with business during the rush season. To avoid impatient customers going to some other firm, Mr. Ball has two pull-type spreader rigs which are rented out to farmers. They buy the fertilizer from him and pay 50¢ an acre for the use of the equipment. After the equipment is paid out, Mr. Ball intends to let farmers have it at cost, providing they pay for accidental breakage.

6. Promoting new business. Last year Mr. Ball decided that fall fertilizing would pay off, but he had no way of proving it immediately.

"Just telling a man how he can make money doesn't mean much. Everybody seems to be telling the farmer how to run his business, until a lot of them are skeptical of any advice.

"Fertilizing during the autumn months would help us a lot by spreading the applications over a longer period. To prove it would help the farmer, I persuaded several to use it at our expense.

"Now we have some accurate check plots of several acres in size, so by late this summer, we'll know something definite. If fall fertilization pays off as we feel it will, these men will tell everyone about it, and the orders will start rolling in."

7. Keeping up prices. "We usually spread from 60 to 80 lb. of anhydrous ammonia and about 250 lb. per acre of 0-20-0," says Mr. Ball, "and we get regular retail price for it. This is not a credit business. We've tried to learn just how much to put on and the best method of doing it. If we reduce our profit in any way, it is by giving the farmer extra services."

8. Learning the people and the farming conditions. Mr. Ball knows every soil type in the area and the type of farming done. Likewise he knows farming because he was once a farmer himself and still owns an irrigated farm. He can talk the farmer's language and often give advice that is accepted.

9. Building a reputation for honesty and service. No one ever doubts his weights because he weighs all fertilizer on public scales.

"We've got our own scales," he says, "but that wouldn't mean anything to a man who used the fertilizer

(Continued on page 11)

SHOP TALK



OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Dealers, whether they have large or small operations, are like everyone else in that they find time to do the important things in their lives. Small businessmen who complain that their store's lack of size requires them to work as hard as any employee, in addition to the chores of management, still can make time, somehow or other, if they are convinced that the gain from sales promotions will be worth the effort put forth.

Lack of sales promotion effort often characterizes the small retail operation. However, many sales promotion ideas demand little time, require little expense and are worth many times their cost in increased profits. Here are some popular and successful sales promotion events which any dealer—large or small—can try.

Meetings Set for Washington Soil Testing Program

PORTLAND, ORE.—A series of meetings has been scheduled in early July as part of the Pacific Northwest Plant Food Assn.'s soil testing program.

The association has allocated \$1,000 for the program. Dealers in five Washington counties will receive \$1 for collecting a soil sample from a local farmer and forwarding it to the state's soil testing service.

The program is being conducted in the counties of Grant, Kittitas, Clark, Skagit and King, with roughly \$200 being allocated to each.

In order to be eligible a dealer must attend a meeting at which he will be instructed in how to take a soil sample and will be given details of the program.

The meetings are scheduled for Ephrata for Grant County, July 8, Ellensburg for Kittitas County July 8, Seattle for King County July 9, Mt. Vernon for Skagit County July 9, and Vancouver for Clark County July 10.

Purposes behind the program, according to the association include: to correct a "serious misunderstanding" of soil testing programs, to acquaint the dealer with the Washington State College testing program, to help farmers obtain economical crop increases, and to promote the fall use of fertilizer.

Heads Station

LUBBOCK, TEXAS—C. E. Fisher, superintendent of the Spur Experiment Station, has been named to succeed Don Jones as superintendent of the Lubbock Station. Mr. Jones, who has been head of the local station for 32 years, is retiring to modified service. Mr. Fisher has been prominent among Southwestern agricultural leaders for many years. In 1952 he received the Hoblitzelle Award for "the Texas agricultural scientist who in the past three years has made the greatest contribution to agriculture in the state." He won the award for developing a chemical-type control of mesquite, which is a woody shrub that infested more than 55 million acres of Texas rangeland.

WYOMING TONNAGE

CHEYENNE, WYO.—Wyoming fertilizer sales in 1956 totaled 10,619 tons, compared with 11,583 tons in 1955, according to the Wyoming Department of Agriculture.

1. Demonstrations: Nothing succeeds like success. A fertilizer demonstration plot which compares the results achieved by properly fertilizing a crop with a crop not fertilized is effective and can convince any doubting Thomas. If the fertilizer retailer can't arrange a demonstration on his own, he will find the county agent and the extension service happy to cooperate by arranging participation in formal "demonstration days."

2. Mail list or birthday list: Over a period of time it is possible to build a reliable mail or birthday list. This may be accomplished by jotting down names and addresses of personal customer-acquaintances, asking shoppers to leave their names, addresses and birthdays in a box on the counter, asking customer participation in a drawing, requiring them to leave their names, addresses and birth dates, or by acquiring lists of names from other sources. Birthday greetings, whether they are posted on the store bulletin board, or sent by mail, are thoughtful acts by the retailer which result in good will and bring in more business.

3. Monthly mimeographed bulletin: Regular bulletins sent to the customer list may contain special prices, reminders to buy certain seasonal items, suggestions for product use, newsy items, and short educational articles. A clerk or the owner's wife in many cases takes care of the stenciling, mimeographing and mailing chores, after the dealer has prepared the copy.

4. Annual sale: An annual sale is a promotion which can build prestige over the years and acts as a timely sales stimulant to items that are specially priced but also to those which are regularly priced. The value of sales, even though they may require several hours of preparation, are without question as sales promoters. Leading and successful department stores have proved that over the years.

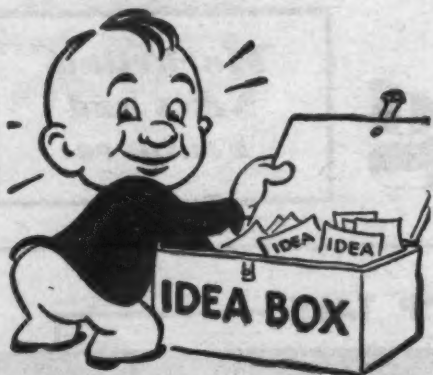
An annual sale should be held at about the same time each year, provide legitimate savings to the customer and should follow a definite planned program laid out beforehand. Dealers should keep results of the sale in a scrap book so that the successful features can be incorporated into the following year's event.

5. Sales training: This is really a sales promotion effort, too. It can pay dividends at the cash register. One dealer uses a 10-minute coffee session regularly to instruct employees. It is informal training but it is effective. A couple of times a year

(Continued on page 13)



"If you don't stop nagging about my bill, I'll take my cash trade elsewhere."



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6593—Soil Fumigant

A new folder explaining how to use Crag Mylone is now available from Union Carbide Chemicals Co., Division of Union Carbide Corp. Mylone is a new, powdered soil fumigant that is said to need no plastic cover. It acts as a herbicide, soil fungicide, and nematocide in pre-planting treatments on a variety of ornamentals. It is now commercially available as a pre-planting treatment on ornamental propagating beds. Experimental use of the product is continuing in many different states on tobacco, vegetable, and forest-tree seed beds, and on turf. Formulated as an 85% wettable powder, Mylone can be applied dry with a fertilizer spreader or suspended in water as a drench or spray. Experimental dosages that gave most satisfactory results range from 100 to 300 lb. per acre, company officials said. Secure the folder by checking No. 6593 on the coupon and mailing it to Croplife.

No. 6594—Vermiculite Folder

A folder entitled, "Granular Formulations with Vermiculite" has been issued by the Vermiculite Institute. The folder covers the preparation of

granular insecticides, herbicides and fungicides with vermiculite as the carrier. Hints on handling and formulating specific products are included. Properties and advantages of using vermiculite are described in the folder. Secure the folder by checking No. 6594 on the coupon and mailing it to Croplife.

No. 6596—Pasted Valve Bag

A development in multiwall packaging is the "stepped-end" bag introduced by the Crown-Zellerbach Corp. The design is a pasted valve bag in which the ends of each ply are cut in a stepped relation to each other, thus allowing each ply to be pasted to itself in the ends. The bottom of the bag is completely closed, while the top is closed except for one corner which is left open for filling on a valve packer. Designed to hold lime, some fertilizers and other products, the bags are claimed to offer these advantages: (1) stepped corners provide more flexibility and greater strength; (2) half sleeve insert insures positive spouting ability; (3) flexible construction of the valve opening allows spouting with one hand; (4) positive closure on corner opposite valve prevents blow-outs; and (5) outer ply slit and inner ply

full diamond fold give maximum strength. For details check No. 6596 on the coupon and mail it to Croplife.

No. 6595—Products Catalog

A 12-page products catalogue and informational booklet has been issued by the American Potash & Chemical Corp. The catalogue includes a description, properties and applications of nearly 70 chemicals marketed under the company's Trona trademark. Among major product groups included in the booklet are agricultural chemicals, boron chemicals, soda products, potassium compounds, bromines, lithium products, electrochemicals and refrigerants. A copy of the booklet will be sent without charge if you will check No. 6595 on the coupon and mail it to Croplife.

No. 6597—Lawn, Garden Guide

A new wall or desk chart, titled "Lawn and Garden Maintenance Guide," which shows how to control many gardening problems involving insects, plant diseases and weeds, has been issued by Diamond Black Leaf Co. The chart recommends one of eight products for treatment of more than 200 conditions. Easy-to-read, the large (16 by 32 in.), illustrated chart is broken down into four major areas—lawns, trees and shrubs, flowers, and vegetables—and gives a quick, ready reference to symptom, cause and treatment of the particular plant malady. The chart is available without charge. Check No. 6597 on the coupon and mail it to Croplife.

Also Available

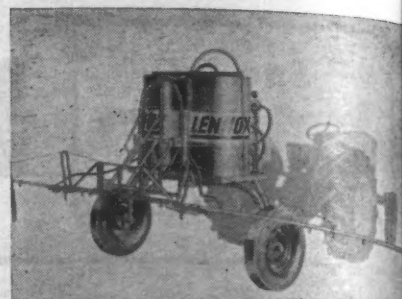
The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6590—Mineral Products Folder

The Minerals & Chemicals Corporation of America has prepared a folder entitled "Minchemistry at Work." The folder describes "quick, easy production of dry, free-flowing pesticides dust bases from sticky solid poisons." Properties of Attaclay, the company's Attapulgit carrier and diluent, are outlined. Secure the folder by checking No. 6590 on the coupon and mailing it to Croplife.

No. 6591—Trailer Mounted Sprayer

An "all-crop" pull-behind liquid fertilizer sprayer has been developed by Lennox Industries. The sprayer is called an all-purpose unit for use with any kind of spray—weed, insect or fertilizer. Among its features are a



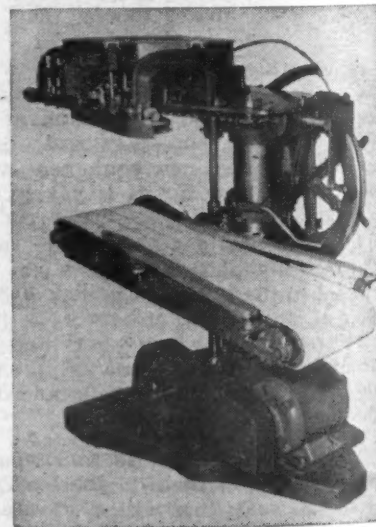
"full-floating" boom using a hydraulic shock absorber; a "break-away" hinge to enable wing booms to move backward and forward when an obstruction is hit; direct-drive pumps driven by tractor PTO shaft; 6-row boom with optional boom extensions to convert into an 8-row sprayer; spray controls on tractor; 13 flat spray nozzles with interchangeable tips; full line of accessories for special jobs; and aluminum and stainless steel pressure regulator. Secure literature giving full details by checking No. 6591 on the coupon and mailing it to Croplife.

No. 5721—Pallet

The Sterling Lumber & Supply Co. reports a new development in pallet manufacture with its product called by the trade name, "Fine-Sawn" pallet. The firm's process is claimed to produce uniformly finished deckboards and stringers in fewer operations and with less waste than usual cost. A "flocked" non-slip surface helps prevent bags and other items from slipping, according to the company. Details and prices are available without charge. Check No. 5721 on the coupon and mail it to this publication.

No. 5736—Bag Closing Machine

A new descriptive folder outlining features of the automatic bag closing machine manufactured by the Hamer Machine Co. is available. The unit is described as a fully automatic closer for 2-, 5-, 10- and 25-lb. bags. Units are also available for 50- and 100-lb. bag sizes. An arrangement of chain drives compresses the top of



the bag and then seals it by a specially designed wire ring and up to 1,800 paper bags per hour can be closed, according to company officials. The models can be used in a variety of plant arrangements. Secure the folder by checking No. 5736 on the coupon and mailing it to this publication.

No. 6587—Lime, Fertilizer Spreader

Ten-ton loads of lime and fertilizer are claimed to spew from custom bodies on the International Harvester Company's model VF-192 motor trucks at a 1½-ton-per-minute rate in soil building services provided by the Cooperative Grange League Federation Exchange, Inc. to member farmers in New York, New Jersey and northern Pennsylvania. Newest units of the 175-truck fleet GLF employs in this agricultural service are like that pictured above at Nichols,

Send me information on the items marked:

- | | |
|---------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> No. 5692—Truck Crane | <input type="checkbox"/> No. 6589—Liquid Spreader |
| <input type="checkbox"/> No. 5701—Valve Bag | <input type="checkbox"/> No. 6590—Mineral Products |
| <input type="checkbox"/> No. 5710—Buildings | <input type="checkbox"/> No. 6591—Sprayer |
| <input type="checkbox"/> No. 5719—Disc Feeder | <input type="checkbox"/> No. 6592—Fungicide |
| <input type="checkbox"/> No. 5721—Pallet | <input type="checkbox"/> No. 6593—Soil Fumigant |
| <input type="checkbox"/> No. 5722—Speed Reducers | <input type="checkbox"/> No. 6594—Folder |
| <input type="checkbox"/> No. 5736—Bag Closer | <input type="checkbox"/> No. 6595—Catalog |
| <input type="checkbox"/> No. 6586—Applicator | <input type="checkbox"/> No. 6596—Bag |
| <input type="checkbox"/> No. 6587—Spreader | <input type="checkbox"/> No. 6597—Garden Guide |
| <input type="checkbox"/> No. 6588—Sulfur Brochure | |

NAME

COMPANY

ADDRESS

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

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Reader Service Dept.

Minneapolis 1, Minn.



N.Y., RF-192 tandem models. The six-wheelers, with auxiliary transmissions, spread acreage that ranges from flat to hilly, rough and soft. Front truck tires have on and off-highway casings and the eight rear tires have lug treads. Spreading gear, fabricated in the GLF shops here, was designed by the cooperative's soil building division. Truck transmission is five speed, with direct in fifth. The auxiliary two-speed transmission permits specific range variances for lime (high) and fertilizer (low). Secure complete details by checking No. 6587 on the coupon and mailing it to Croplife.

No. 6592—Fungicide

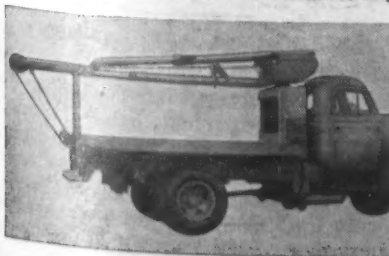
A technical bulletin on Terraclor, a new fungicide recommended for the control of a number of crop diseases, primarily certain soil-borne types, is announced by Olin Mathieson Chemical Corp. Terraclor is the firm's registered trade mark for pentachloronitrobenzene (PCNB). Terraclor is specific for a number of important soil-borne diseases. The product is available in various commercial formulations—as dust, wettable powders and emulsifiable concentrates. It is compatible with all insecticides and fungicides with a pH of 7 or below which are similar in formulation, company officials say. It is highly stable, relatively non-poisonous, and has a long residual, it is claimed. The product is broadcast or dusted in the row with suitable applicators. Conventional equipment is used for spray application. The material is non-corrosive. Additional information and literature are available by checking No. 6592 on the coupon and mailing it to Croplife.

No. 5719—Disc Feeder

A new series of MECO SRV variable speed disc feeders, designed especially for batching or proportioning of crushed or ground dry material such as chemicals and additives, has been announced by the Manufacturers Equipment Co. The rate of discharge on the feeders is said to be accurately controlled and can be varied during operation with a hand wheel adjustment. Several sizes are available. The smallest unit has a constant feed range from a light trickle up to 2,000 pounds per hour. Larger models can feed up to 80 tons per hour. Models equipped with paddles are available where intense bin agitation is desired. A descriptive bulletin is available. Check No. 5719 on the coupon and mail it to this publication.

No. 5692—Truck Crane

A truck crane unit has been added to the truck equipment lines of the Anthony Co., it was announced through officials of Truck-Crane, Inc., subsidiary of the Anthony Co. The truck crane unit requires 18 in. of space behind the truck or tractor cab and leaves the body free for the payload, officials said. Loading, hauling and unloading are combined into one work unit, it is claimed. Hydraulic power is provided and the boom swing



is 280°. It projects or retracts hydraulically in the horizontal position or at any point up to an 85° elevation. Both horizontal and elevating type booms are available. Capacity is 5,000 lb. and ground level operation is possible. Check No. 5692 on the coupon and mail it to secure full details.

No. 6589—Hose Pump Spreaders

A selling and renting plan for Linck's liquid spreaders has been set up for dealers, according to the O. E. Linck Co., Inc. The program offers a line of concentrated lawn chemicals and patented liquid spreaders, which were developed under the patents of the University of Tennessee, according to Linck officials. A folder on the program outlines the firm's line of



lawn chemicals, including a crab grass killer, weed killer, fungicide, insecticide, fertilizer, nitrogen, iron and wetting agent. Secure the details by checking No. 6589 on the coupon and mailing it to Croplife.

No. 5701—Pasted Valve Bag

Arkell & Smiths announces its new "SSS" (super side strength) multi-wall bag. The bag is a standard pasted valve bag with a reinforcing strip run longitudinally along each edge to reinforce the sides and the valve and bottom corners. The manufacturer claims its new bag may save up to 10% on the cost of a sewn valve bag and up to 5% on the cost of a standard pasted valve bag. The company announcement states: "In principle,

the 'SSS' bag is superior to the sewn structural strip bag: when a ply is removed from the sewn bag, the bag is weakened along the ends. The bag also is superior to the strength end bag, for it gives the bag reinforcement along the sides and shoulders; the strength end bag reinforces only the shoulders, and the sewing weakens the ends. For further information check No. 5701 on the coupon and mail it to this publication.

No. 6588—Sulfur Brochure

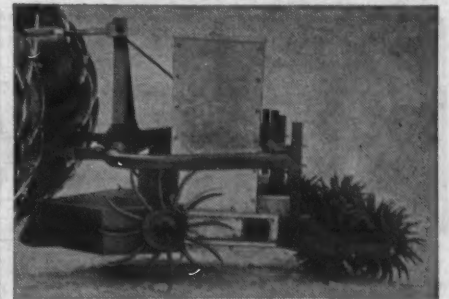
The Stauffer Chemical Co. has published a comprehensive 48-page brochure on sulfur. The brochure contains a description of production and refining techniques, statistics on the world's production of sulfur, and notes on the various uses of the material. It also includes specifications for the several types of conventional and insoluble sulfurs used in industry and agriculture, and tabulations of the physical and chemical properties of sulfur in its different forms. A copy of the brochure, "Stauffer Sulfurs," is available free on request. Check No. 6588 on the coupon and mail it to Croplife.

No. 5710—Steel Buildings

Black, Sivalls & Bryson, Inc., announces a new line of "Perfection" prefabricated steel buildings for factory, farm and commercial use. A truss-type building with panel side-walls and ends, the building is available in a variety of standard sizes and styles in regular increments up to 100 ft. in width, 20 ft. in height and unlimited lengths. Prefabricated wall panels, with door and window frames installed during fabrication, permit quick erection of the buildings, it is claimed. The roof is the only area requiring sheeting in the field. Available with the building are industrial windows, doors, translucent roof panels, insulation, guttering, ventilators and louvers. Partitions, cranes and monorails are also available upon special request. Secure details by checking No. 5710 on the coupon and mailing it to this publication.

No. 6586—Dispenser-Applicator

The Howry-Berg Steel & Iron Works has engineered and tested a combined machine which is claimed to dispense all dry chemicals through the use of a conveyor belt arrangement, and thoroughly mixes the chemicals into the soil by means of special tiller applicator wheels. Both operations are said to be accomplished simultaneously, placing the chem-



icals only where needed, without loss from wind drift. Machines are attachable to tool or cultivator bars mounted on farm tractors and are obtainable for band widths of 6, 8, 10, 12, and 18 in. Tiller applicator units equipped with spray nozzle holders for use with wettable chemicals are also available for band widths 4 to 18 in., in increments of 2 in. Secure complete details by checking No. 6586 on the coupon and mail it to Croplife.

No. 5722—Speed Reducers

A new, illustrated, 8-page brochure showing the line of Strong-Scott Manufacturing Co.'s speed reducers is available. The reducers are recommended for speed reduction of 1/2 to 50 H.P., on equipment such as elevator legs, conveyors and many other types of equipment. Check No. 5722 on the coupon and mail it to secure the bulletin.

Crop Duster Purchases Obsolete Navy Planes

SACRAMENTO — Charles T. Jensen, Sacramento crop duster, has been successful in his campaign to obtain obsolete torpedo bombers which the Navy wanted to sell for salvage. Some months ago Mr. Jensen learned that the Navy intended to sell for salvage 724 TBM's and would not allow them to be sold for operational purposes.

Mr. Jensen protested to Congressman John E. Moss of the third California district who convinced the Navy they should permit use of the planes by crop dusters. Mr. Jensen obtained three of the planes for about \$3,600 each as contrasted with the \$900 which the Navy would have received from each plane for salvage.

AGRONOMY HEAD RESIGNS

STATE COLLEGE, N.M.—John C. Overpeck, head of New Mexico A&M's agronomy department for the past 34 years, resigned the department headship effective July 1, according to Dr. Robert H. Black, dean and director of agriculture and home economics at A&M. Marvin L. Wilson, a member of the agronomy department at New Mexico A&M since 1949, will succeed Mr. Overpeck, who will remain on the staff of the agronomy department as a part-time professor and researcher.

C. V. BALL

(Continued from page 9)

and didn't get results. He could say we short-changed him on fertilizer. So to keep down anything like this, the tank is weighed when it leaves the shop and again when the job is finished. Thus there can be no doubt about how much he is paying for."

10. Believing in the products he sells. Mr. Ball believes so wholeheartedly in fertilizer as a profit-maker in this area that he can talk it for hours at a time.

"This year the farmers here in Dawson County alone will add \$1,000,000 to their crop receipts by using fertilizer. We can arrive at this figure rather simply. The average cotton yield has been a bale per acre on unfertilized fields; it has been a bale and a half on fertilized land. So if you are selling something that will raise the income this much, why not believe in it and work like the old horned gentlemen trying to sell it to every farmer in the county?"



GETS AGRONOMY AWARD—Howard G. Small, Jr., of Carolina Beach, N.C., (second from right), senior at North Carolina State College, was the 1957 winner of the college's agronomy achievement award including \$200 in cash and an engraved plaque. The award presentation was made by Louis H. Wilson, (second from left) director of information for the National Plant Food Institute, the award donor. Looking on are Dr. Homer C. Folks, (left) in charge of soils teaching and student placement at the college, and Dr. J. W. Fitts, head of the college's soils department.



Doing Business With

Oscar & Pat



By AL P. NELSON
Croplife Special Writer

There are some days when things never seem to go right. Minnie Schoenfeld, Oscar's harassed, somewhat cowed, but very frugal wife had been leaning over her garden fence gossiping a little with Mrs. Mike Slovak, when suddenly she said: "Oh, my pork chops."

Turning, she gathered her skirts and fled for her kitchen to find the house full of smoke, the edges of the pork chops crisp and only the middle of the chops edible. Minnie could have wept; in fact, she was going to when the front door opened and Oscar came home.

"Was ist los?" he cried in alarm. "Are you burning the house down?"

"No—no," Minnie stammered worriedly. "But I was outside in the garden and stayed too long, and the pork chops burned."

Oscar snorted and stomped angrily into the kitchen and surveyed the unsavory mess in the pan. He looked severely at his wife: "Ach, are they the 59¢ a pound ones?"

Minnie nodded fearfully. "Yes, they are the ones I always get at Farmers Market, nine blocks down the street."

Oscar pursed his lips. "Well, that is bad enough to waste 59¢ chops, but it is good you did not buy the 69¢ ones. Minnie, I am surprised at you. You are getting to be as careless as that Irishman in the office. Ach, and I'll bet you were gossiping with that Mrs. Slovak again."

"I—I was out there just for a minute to pick radishes, and—and," began Minnie.

"And she started to tell you something about who was runnink aroundt with somebody else's wife and so you stayed and listened!"

The telltale red on Minnie's face was a giveaway.

"You are going to have to improve around here," Oscar snorted angrily. "You are going to have to tend to your knittin' and not get a lot of crazy ideas like that Pat."

"I—I have some cold ham I can cut up for supper," Minnie said. "And I have fresh kuchen. It will be a good meal, Oscar. Don't scold."

"Don't scold! Ach, you are getting as soft as Pat. He says I shouldn't yell at him so much. But you have to yell at people to set them straight. Otherwise they are so foolish. That crazy Pat—and now you."

A great light came into Minnie's mind. Normally she would expect to get scolded for a mishap to cheap pork chops or any other kind of meat, but now she sensed how to turn the wrath of her husband from herself; she knew how to become a sounding board.

"Oscar," she asked timidly, "did—did something go wrong at the office?"

"Wrong!" thundered her husband. "Something is wrong there all the time, so long as that Irishman is there. Himmel, I can't sleep goot nights any more. Always I worry what he's doin' at the office nights. Why can't he work days like sensible people do?"

Minnie went on preparing the revised dinner. "What went wrong with Pat today?"

"Always he comes up with such crazy ideas," he said peevishly. "Now do you want to know what he wants to do in that demonstration garden?"

"We got some very good sweet corn and tomatoes from that garden last year," Minnie observed, womanlike. "It must be all the fertilizer you and Pat used."

"I don't care what we got out of the garden last year!" bellowed Oscar. "I will not march around there with a sign on my back."

"A sign on your back?" Minnie was shocked.

"Yes, he wants me to put on old clothes and get a pail and a stick and go through the four rows of potatoes in the demonstration garden and knock the potato bugs off into the pail! On the sign it would say 'The Old Way.'"

"The Old Way!" Minnie was nonplussed.

"Yes, and then he would walk along behind me with a sprayer on his back squirting the plants, and he would have a sign on his back which would say 'The New Way.'"

Minnie looked offended. "Well, the

nerve of him. Why doesn't he give you the sprayer and he take the potato pail and the other sign?"

"Ach, he says the pail would suit me better than him. And the sign, too. But I will not carry any sign, old or new, Minnie. Ach, I would look foolish."

"But why, why does he want to have you two do this?"

"Ach, he wants to have a picture taken of us with our signs showing and print it in a newspaper ad," Oscar snapped. "He says it will help sell more sprayers. I have neffer been so insulted in my life. Oscar Schoenfeld, ach, is a big man and has money in the bank, lots of it. He does not make a fool of himself for people to laugh at."

Minnie hurried forward and placed some sliced cold ham on the table, along with hot mashed potatoes. "Sit down and eat, Oscar, and you will feel better."

Oscar sat down and looked at the inviting fare, also at the pickled apples, the sour pickles, the asparagus from neighbors' fencerows and the brown, cinnamon topped coffee cake.

"Minnie," he said, "you are much better than Pat. When I scold you, you listen and you change like I want you to. That Pat he just gets mad."

Minnie was glad that her face was turned as Oscar looked in her direction, for she was thinking: "I've got news for you, Oscar. I get mad, too, but I don't let it show. Someday—"

Fertilizer Law Signed in California

SACRAMENTO—Gov. Goodwin J. Knight has signed Assembly Bill 393 which continues the 3¢ per ton tax on agricultural minerals, not used in the manufacture of commercial fertilizers, until Sept. 30, 1959.

The 15¢ per ton on commercial fertilizers is continued and 10¢ per ton is levied on agricultural minerals when sold to be used in the manufacture of commercial fertilizer.

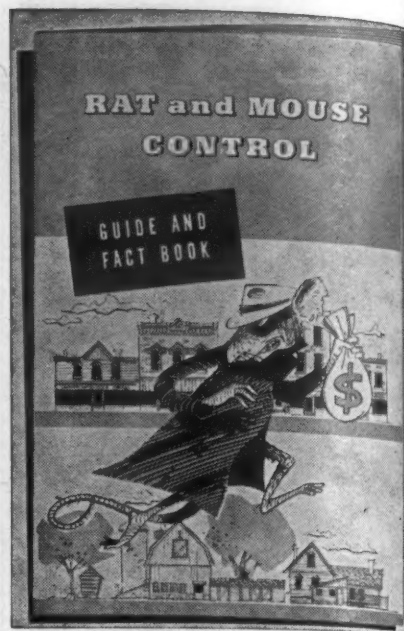
A commercial fertilizers registrant selling agricultural minerals to an unregistered person in the original and properly labeled lots or packages of an agricultural minerals registrant must pay the agricultural minerals tonnage tax.

Each registered person is required to keep accurate accounts of sales of commercial fertilizers and agricultural minerals, and the accounts must be kept open at all times for inspection by the state director of agriculture. Quarterly statements of sales accompanied by the tonnage tax are required. Upon receipt of the tax and the statement, the director will issue a statement of compliance. The new law becomes effective Sept. 11, 1957.

Peavey Names Adviser For Youth Programs

MINNEAPOLIS—Max Amberson has been appointed an assistant director of the agricultural department of F. H. Peavey & Co. He will direct Peavey's youth activities in a four-state area. The announcement was made by Clinton C. Zinter, director of the pioneer grain firm's agricultural department.

Mr. Amberson, vocational agriculture instructor at Whitehall, Mont., will take over the youth job from Carl Amstrup, also an assistant director. Mr. Amstrup will join Mr. Zinter in supervision of Peavey's annual on-the-farm fertilizer and weed chemical tests.



RODENT CONTROL—This cartoon is the cover for a new booklet, "Rat and Mouse Control," published by the Wisconsin Alumni Research Foundation.

Booklet on Mouse And Rat Control Now Available

MADISON, WIS. — Rats cause a billion dollars worth of damage annually to U.S. food, property, and livestock—the production of more than 100,000 average American farms. This is one of the facts brought out in a new booklet, "Rat and Mouse Control," published by the Wisconsin Alumni Research Foundation.

Eight months in preparation, the new booklet represents an authoritative source of information on rodent control. The first section of the booklet discusses the rodent problem; the second provides specific instructions on how to run a community campaign. Ways of initiating campaigns to arouse community support, and most effective methods of rodent-baiting with rodenticides such as Warfarin, are discussed.

The foundation has announced that copies of the book are being distributed to agricultural leaders through state extension specialists, 4-H and FFA administrators, and that additional copies are available from officials of the Branch of Predator and Rodent Control, U.S. Fish and Wildlife Service, or from the foundation.

Copies of the book will be furnished without charge to any community group staging a rodent control program, and requests should be mailed to the Educational Department, Wisconsin Alumni Research Foundation, P.O. Box 2217, Madison, Wis.

NEW MEXICO APPOINTMENTS

STATE COLLEGE, N.M.—Two scientists have been appointed to positions with the New Mexico A&M College Experiment Station, effective July 1, according to Dr. Robert H. Black, dean and director of agriculture at A&M. Dr. Stuart R. Race, a recent graduate of Rutgers University, has been appointed assistant entomologist with the botany and entomology department headed by Dr. J. G. Watts, and will work chiefly on alfalfa insect problems. Dr. Glyn Throneberry, a member of the A&M biology department for the past two years, has been appointed assistant plant physiologist in the department of botany and entomology with the A&M Agricultural Experiment Station. He will work chiefly on alfalfa and cotton studies.

CALIFORNIA APPOINTMENT

SACRAMENTO—Gov. Goodwin J. Knight has reappointed Charles C. Delk of Fresno to the California Structural Pest Control Board for a term ending in January, 1961. Mr. Delk is past president of the California Pest Control Assn. and became a member of the board in 1952.



BROCCOLI BOOST—Fertilization trials on many crops were among featured experiments shown at the vegetable crops field day on the University of California's Davis Campus. Here John C. Lingle, vegetable crops specialist on the Davis staff, shows how the row of broccoli on the right has responded by rapid growth to fertilizer applications of nitrogen and phosphorus equal to 120 lb. per acre. The "check" rows on the left, with much smaller plants, received no added soil nourishment. In a nearby plot, the field day visitors saw striking differences in lettuce growth and color resulting from different fertilizer treatments. Addition of extra nitrogen tended to give the lettuce a darker green color. Tomato fertilizer practices were also under study in the university experimental field plots. The importance of under-the-seed placement of phosphorus to early tomato plant growth has been decisively proved, the visitors were told.



FARM SERVICE DATA

Extension Station Reports

Willamette valley farmers are advised by Hollis Ottaway, Marion County extension agent, to spray creeping mesquite before heading. He points out that creeping mesquite, often referred to as German mesquite, is the most serious weed pest in the Marion County foothill area.

A new technique is being used successfully to kill root-rot fungicide and citrus nematode, two major pests of citrus crops. Applications of sodium-methyl dithiocarbamate kill nematodes and fungi to a depth of three or more feet when used in circular basins at sites where trees are to be planted.

The basin method of application was devised by Dr. Richard C. Baines, plant nematologist, and Dr. T. A. De Wolfe, associate specialist in plant pathology on the Riverside campus of the University of California. They report control of root rot fungi (phytophthora spp.) and the nematode throughout treated areas.

A grower near Corona used the treatment before planting, saving all but one of 100 trees from the root-rot fungi.

Wyoming's many soils and soil materials are discussed in a new University of Wyoming bulletin. The author, T. J. Dunnewald, soils research associate, discusses the soils by seven groups. From soil-survey information to date, he tells the origin, appearance, location, qualities and present use of each group.

The discussion ranges from the mountain tops through the valleys and plains to sand dunes on the desert. The bulletin, a progress report of about 50 years of soil surveys by various agencies, supplements a comprehensive soils map of Wyoming that he has prepared. The map, now in press, will be available to technical users this summer.

California farmers can improve their crop production efficiency and, in so doing, materially increase their annual net profit, according to the California Fertilizer Assn. The key to this desirable end is fuller employment of proven crop production practices, of which one of the utmost importance is proper fertilization.

The association pointed to a table showing 1954 fertilizer use, state by state, compiled by the National Plant Food Institute from information provided by the U.S. Bureau of the Census, which shows that only 28.5% of California's cropland, including improved pasture, was fertilized during that year.

The farmers of Arizona fertilized considerably more of their cropland than did their brothers across the Colorado River, an average of 52% being treated with this vital production aid, continued the association, which pointed out that the per acre production of cotton, to single out one major crop in both states, was somewhat higher in Arizona than in California.

Officials of the U.S. Department of Agriculture and of the state universities frequently point out the fact that on the average, \$1 invested in proper fertilization will return a profit of \$3 to \$4 after figuring the cost of fertilizer and its application, and that application of fertilizer in accordance with recommendations will usually reduce the per-acre and the per-unit cost of production, thus increasing the farmer's net profit. The

association reports some instances of as high as \$12.00 profit from each \$1.00 invested in fertilizer.

In a few years scientists at Colorado State University, at Ft. Collins, may have the answer to how fast soil dries out between irrigations. If current experiments are successful, field observers will be able to predict evaporation of soil moisture with a high degree of accuracy.

Dr. A. T. Corey, civil engineer with the Wyoming Experiment Station, project leader, said the purpose is to discover how evaporation is affected by temperature, humidity, soil type, water table depth and radiation.

"At present we are hunting for knowledge of the process rather than the application," Dr. Corey said.

The project, which started in November, will last for about five years. Assisting Dr. Corey with the work are Dick Schleusener and Bob Staley. Mr. Schleusener is a graduate research assistant working towards his doctorate, and Mr. Staley is employed by the Agricultural Research Service, U.S. Department of Agriculture, and is writing his master's thesis.

The Bureau of Chemistry, California Department of Agriculture, has published its 1955-56 annual report on pesticides, Special Publication No. 264.

It shows the bureau's findings on 1,859 official samples of insecticides, fungicides and other pesticides. Also included are the names and addresses of registered firms, the brand names of the sampled products, the guaranteed compositions and the percentages found by analysis in the Sacramento laboratory. The publication points out that a record high of 11,904 pesticides were registered for sale during 1955-56.

West Texas farmers "backed to the wall" by acreage controls and low grain sorghum prices are scanning the list of vegetable crops in a search for some profitable use of diverted acreage. Tomatoes may fill the bill if growers can economically produce the necessary quality for moving into central states' markets.

A 1956 study conducted by Texas A&M's department of agricultural economics and sociology revealed that farmers in Bailey, Parmer, Deaf Smith, Castro, Lamb, Hale, Lubbock and Floyd counties produced 348 bu. of tomatoes an acre. Production and marketing costs averaged \$188 an acre.

Most apple trees in northern Utah are not getting enough nitrogen fertilizer, points out Dr. Robert A. Norton, assistant professor of horticulture at Utah State University. "If trees don't add 6 to 12 inches to their terminal shoots each year suspect nitrogen deficiency," he adds.

Spray thinning of apples in California has reduced the fruit set and decreased the cost appreciably of hand thinning of fruits. In some cases successful spray thinning at blossom time may be possible without need of a follow-up hand thinning later in the season. This is the report of Omund Lilleland and Kay Uriu, pomologists of University of California, Davis, who are testing new thinning chemicals and new methods of application.

The specialists found that hand thinners can easily remove too many

fruits in an orchard where thinning sprays were applied at blossom time. Supplementary hand thinning should always be light and should be carefully supervised, they cautioned.

"Fifty apples per hundred blossom clusters will generally attain marketable size," Mr. Lilleland explained. "Thus, additional thinning may not be necessary when spray thinning or other factors reduce fruit set to this extent."

Caustic thinning sprays, mostly of the dinitro type, may be used with proper control on short blooming apple varieties, said the pomologists. These should be applied when 75-90% of the blossoms have opened.

Hormone sprays are suitable for either short or long blooming varieties, they reported. Naphthalene acetamide, a hormone-type spray, was very effective when tested on the long-blooming Yellow Newtown variety in the Watsonville area.

The Watsonville tests showed that naphthalene acetamide in a 60-parts-per-million solution applied at petal fall could give thinning results about equal to those obtained in hand thinning. Where supplementary hand thinning was desired, a 40-parts-per-million solution was satisfactory. Concentrations vary for other varieties.

The benefits of spray thinning should be figured on a two-year basis, the researchers said. They pointed out that proper use of thinning sprays can regulate an alternate bearing orchard and bring about a more uniform yield from year to year.

Sprays used against fruit tree aphids are more effective when applied before aphids curl the cherry, peach, apple, prune or other tree leaves. This was the advice recently of Dr. G. F. Knowlton, extension entomologist at Utah State University. He said aphids have been unusually numerous on cherry trees in some northern Utah localities this spring.

OVER THE COUNTER

(Continued from page 9)

or more is not too often for the dealer to conduct a 2-hour sales training session, preceded perhaps with a dinner.

Many a dealer thinks of sales promotion as a highly involved process requiring complicated plans and lots of money to put into effect. He may think of a sales promotion manager and a special sales promotion department. This need not be so. Actually, sales promotion can begin on a very small scale and grow with the business, often causing it to grow. The point is—no matter how small the business—some sales promotion plan can be adopted. It will be a beginning and once established, it becomes easier to carry out in the coming years. Any dealer can get started on sales promotion any day he feels like it.

Robert Z. Rollins Heads California Bureau

SACRAMENTO—Robert Z. Rollins, who began his career with the Bureau of Chemistry, California Department of Agriculture, as a junior chemist in 1930, has been named chief of the bureau succeeding Allen B. Lemmon, recently named chief of the Division of Plant Industry.

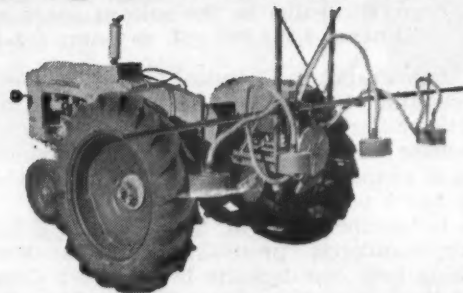
Mr. Rollins was succeeded as assistant chief by DeWitt Bishop, Sacramento, who entered the department in 1937 as an inspector assigned to the Los Angeles office. Both appointments were made from civil service lists. Both appointees received their degrees in chemistry from the University of California.

John B. Hillis, also a career man with 20 years service in the Bureau of Chemistry in Los Angeles, was promoted to district inspector in Sacramento.

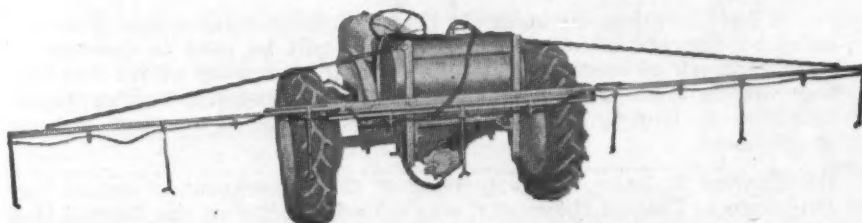
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What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

The consumption of fertilizers for the 1955-56 fiscal year ending June 30, 1956 declined from the 1954-55 level in the U.S., the USDA reported. The annual consumption report stated that total consumption was 22,193,070 tons, which was 533,392 tons less than the similar period of previous year. Only one region of the U.S. showed a gain in use of mixed fertilizers. This was noted in the three Pacific states of California, Oregon and Washington.

There were several regions, however, in which gains were registered in the consumption of plant food materials, with the greatest gain in this category being registered in the East North Central region comprising Ohio, Indiana, Illinois, Michigan and Wisconsin. Use there was 139,414 tons greater than in the previous year.

Investigation into the causes for the April 16 explosion at Monsanto Chemical Company's Nitro, W. Va. plant which took the lives of eight workers and destroyed a methyl parathion production unit, revealed that an instrument failure started the chain of actions resulting in the explosion.

That damage by the alfalfa aphid is not as extensive as anticipated earlier was announced by the U.S. Department of Agriculture. By June 1, the pest had not reached the damaging proportions that it had by the same date in previous years since its discovery in the U.S. in 1954.

The Province of Saskatchewan, Canada, reported that outbreaks of grasshoppers and cutworms were threatening crops. Because of having kept on hand large quantities of pesticidal materials since a similar outbreak in 1951, Saskatchewan officials reported that sufficient amounts of insecticides were available to cope with the situation.

The National Plant Food Institute, at its June 9-12 meeting at the Greenbrier Hotel, White Sulphur Springs, W. Va., voted to launch an expanded program of education and demonstration for promoting greater use of fertilizers. Six potash producing companies, however, objected to the financial arrangements of the plan, declaring that their participation in the NPFI's program would result in an "additional burden" in view of their present support of the American Potash Institute's program of similar nature.

On June 20, a week following the Greenbrier meeting, John A. Miller, NPFI president, issued a statement asking that the six potash producers accept, for one year, the new higher dues structure adopted to finance the expanded NPFI program. Meanwhile a committee appointed by the Institute's executive committee, will study the dues situation for all members to see if any inequities exist.

New officers for the National Plant Food Institute were named as follows: C. T. Prindeville, Swift & Co., Chicago, chairman of the board; John A. Miller, Price Chemical Co., Louisville, Ky., president; Dr. Russell Coleman and Paul T. Truitt, executive vice presidents; W. R. Allstetter, vice president; Louis H. Wilson, secretary and director of information; and William S. Ritnour, secretary.

William J. Haude was named president of the Grace Chemical Co. division of W. R. Grace & Co. He was formerly vice president and general manager of Grace Chemical Co. at Memphis, Tenn.

American Potash & Chemical Corp., Los Angeles, announced that it will double its production capacity of granular potash at its Trona, Cal. plant. The project is expected to cost about \$750,000, which is part of the company's current improvement program expected to total some \$3,500,000.

Sales of liquid insecticides used for household and sanitary purposes totaled some 17 million gallons in 1956, the Chemical Specialties Manufacturers' Assn. announced at its midyear meeting in Chicago. Big gains in the sale of space sprays were tallied, the 1956 total being 4,188,304 gal. as compared to 1,797,515 gal. in 1955.

San Francisco Chemical Co., an affiliate of Stauffer Chemical Co., solved successfully the problem of beneficiation of some 700 million tons of phosphatic material located in Utah. The company was considering an offer to purchase electrical energy from the Flaming Gorge Dam for use in production of elemental phosphorus. The dam, located over the Utah line in Wyoming, has a potential of some 80,000 kw.

In another part of the U.S., investigations of phosphate ore deposits were considered "promising." The Beaufort Mining and Development Co., looking into ore deposits in Beaufort County tidelands of South Carolina, said that several months will be required before a final statement may be made about the quantity and composition of the material.

A pilot fertilizer mixing plant near Pittsburg, Kansas, was dedicated by Spencer Chemical Co. The plant will be used to develop research work on mixed fertilizer processing, and many of the findings will be made available to the fertilizer industry, according to Dr. John R. Brown, Jr., vice president in charge of research and development.

Dr. Charles E. Palm, formerly head of the department of entomology and limnology at Cornell University, was named director of the Cornell University Agricultural Experiment Station and director of research for the New York State Colleges of Agriculture and Home Economics.

Pesticide supplies for the 1957 season are ample for normal demands, according to the 1956-57 "Pesticide Situation" prepared by Dr. Harold H. Shepard, Food and Requirements Division of USDA, Washington, D.C. Production last year was larger than ever before, and domestic disappearance of materials rose considerably over the previous year. The total dollar value of pesticide exports was also up. Producers' over-all stocks at the end of the 1955-56 crop year were higher than they were a year earlier, the report said.

Nitric acid production in the U.S. showed a gain of 126,500 tons in 1956 over the previous year, it was announced by the U.S. Department of Commerce. The U.S. annual capacity on Jan. 1, 1956 for production of nitric acid comprised 3,019,000 tons in commercial facilities and 2,263,000 tons in government (primarily ordnance) facilities. The total of these capacities represented an expansion of 77% over the facilities in existence on Jan. 1, 1951.

Rio Grande Citrus Growers Protest Fruit Fly Quarantine

WESLACO, TEXAS — A group of Rio Grande Valley citrus fruit leaders met recently to protest the new regulations concerning the quarantine of the Mexican fruit fly.

Twenty members at the meeting signed petitions of protest, and say these are being sent to Ezra Taft Benson, secretary of agriculture. The basis of complaint, say the fruit growers, is that the rules requiring the fumigation of all citrus fruit shipped from the area will be extremely costly to the producers.

With 30 packing sheds preparing to work around the clock, the group doubts if the government will put enough inspectors at the locations to supervise the work. This will require many more inspectors than have ever worked in the past.

The group adopted several alternatives which they asked the secretary to consider. They ask that all groves be checked to see if the fly is present. If it is not, then they believe there is no need for fumigating the fruit.

If the flies are found, the group is willing to fumigate fruit from the infested orchards, but see no reason why any fruit should be sterilized if it is being shipped to non-producing areas. They define this as anything north of the southern line of Colorado, Kansas, Missouri, Kentucky and Virginia.

Another resolution adopted at the meeting is that the department speed up the work to determine if citrus fruit can be properly sterilized in mesh or plastic bags when placed in open containers. The petition claims that the new resolutions will require many more sheds, and that the entire operation will prove very expensive.

The new regulations were explained to the group by B. C. Stevenson, supervisor for the Bureau of Plant Quarantine at Harlingen, Texas.

Transland Ag-2 Undergoing Evaluation

LOS ANGELES — The Transland Co.'s new Ag-2 agricultural and forestry airplane is currently undergoing engineering and mechanical evaluation. Minor modifications resulting from a recent series of flight tests are being incorporated and the entire airplane is being sealed for complete corrosion-resistance to agricultural chemicals, according to the firm.

Flight test evaluation of the Ag-2, recently equipped with a Pratt & Whitney R-1340, 600 h.p. engine, will be initiated soon. At the completion of these tests accurate performance data will be compiled for release.

The Ag-2, designed by George S. Wing, Transland president, made its first flight test in October, 1956 and in December was used to help combat the Santa Monica Mountain fire in California. Eighty percent of the engineering data has been submitted to the CAA towards aircraft certification.

Name of Colorado Institution Changed

FORT COLLINS, COLO. — Colorado's land-grant institution, previously known as Colorado A&M College, has recently become Colorado State University.

The change in name was approved by the Colorado general assembly and signed into law by the governor "in recognition of the growth in stature and service achieved by the institution in recent decades," said William E. Morgan, university president.

FLORIDA APPOINTMENT

GAINESVILLE, FLA. — Forrest E. Myers has been named assistant to the director of the Florida Agricultural Extension Service.



By RAYMOND ROSSON
County Agent, Washington County, Tenn.

Because people are different, situations are different and dealers are different, it is hard to make specific recommendations about what will inspire people to act.

However, selling is as much inspiration as it is information. Extension people have to sell and dealers have to sell, and that makes me wonder sometimes if it wouldn't be better for a dealer or businessman to talk about and boost the people who will do business with him, rather than to talk about himself or his firm. Mr. Public Relations is one of the best salesmen I've ever met.

Speaking of selling, I think agriculture needs good selling by the right persons, people who really understand agriculture's problems. And that reminds me, back in one of the erosion years, an old colored gentleman borrowed my Dad's shotgun to hunt squirrels. We heard him "bang" and "bang" one after another, and when he came in we asked him about his luck, and he said, "Every man who goes to the woods is no good shootman." He didn't have one squirrel.

Maybe people are confused when they talk about our agricultural problems. I think people in town—homemakers, businessmen and professional people—really would like to know just what is the situation as it relates to farms and farming.

There is always one question that intrigues me: "What would happen if agricultural people went on a 40-hour week, instead of the 60-hour week (if it's dairying it's a 75-hour week). On the other hand, if all industrial workers would go on a 60-hour week instead of the 40-hour week we have now, what would happen?"

Pilot Training School Rescheduled in California

FRESNO, CAL. — The aerial applicators pilot training school which was originally scheduled for last February at the University of California, Davis, has been rescheduled for some time this summer or fall, according to William D. Austin, executive secretary of the Agricultural Aircraft Assn.

The California school, which has been in preparation stages for several months, will be patterned closely after those already in operation. The course is divided into two phases:

1. Orientation and familiarization of such basic factors as safety in handling farm chemicals, insect and weed control recommendations and practices, proper handling and care of specialized equipment, etc.

2. The flight phase will consist of up to 30 hours of actual flight time in the types of aircraft used by the applying industry.

Entrance requirements are a valid CAA commercial pilots license and at least 500 hours in light single-engine aircraft. Commercial pilots who are interested in becoming agricultural pilots should contact: Agricultural Aircraft Assn., Inc., Chandler Field, Fresno.

Survey Shows Ways Used to Cut Cost Of Maintaining Field Selling Force

NEW YORK—The one largest marketing expense in most lines of products is the cost of maintaining the field selling force, according to a Dun's Review and Modern Industry survey of a selected group of companies. Many companies are reducing their selling costs by increasing the number of sales calls per day, the report indicates.

Nine out of 10 companies are getting more sales calls per day than they were 10 years ago, according to the survey. This is being done not by any one sweeping change or panacea, but rather by combining skillfully an entire panorama of cost-cutting measures.

To meet the new era of the hard sell, many companies find that they have to provide their customers with more than just a reliable product at a fair price. Customers demand more service and more attention to their special problems. This calls for a substantial increase in the selling time spent face-to-face with customers and prospects and a corresponding decrease in time spent in travel.

According to the Dun's Review survey, the problem is being partly met by realigning sales territories. Smaller territories enable the salesmen to provide more intensive coverage of a larger number of accounts. Also, many companies are opening branch sales offices to follow the shifts in industry and population.

Several of the surveyed companies are providing salesmen with more selling time by turning over technical details of the sale to an office engineer. He can talk to the customer by phone and save the salesman's time and, in some instances, a trip.

Other companies stretch the field force's selling time by increasing sales research. They not only locate prospects for the salesman, but also estimate how many calls the prospect merits on the basis of projected sales. In most companies, the prospecting is left to the salesman, but increasingly the men are provided with the latest directories, trade lists and other time-saving sources of information.

Since "too much paperwork" is still the salesman's persistent complaint, many companies are taking a fresh look at how the salesman's call reports are being used. Some companies find that much of it is not really needed, but has been compiled as a matter of course. One company now requires call reports only in unusual situations—when a major change in the status of the account occurs, when new competitive practices develop, or when an initial call is made.

One company increased the selling time on the salesman's working day with the help of an "itinerary call report." This is a report on planned calls and is filled out before the salesman begins to swing through his territory. The very act of placing plans on paper points up any time-wasting backtracking and idleness that could be used productively.

In most of the surveyed companies salesmen are doing more selling by phone now than they did just a few years ago.

About half of the surveyed companies report that they have improved the salesman's use of time by closer field supervision. Not only are territories being made smaller, but more people are entering sales management, so that fewer salesmen report to one immediate supervisor.

In many companies, sales training is no longer confined to the newcomer. Instead, it is now an integral part of the sales management program. Salesmanship is becoming increasingly systematized and "scientific" to keep pace with the growth of plant technology. Consequently, continuous training and retraining in the light of new markets and methods are mandatory to improve sales efficiency and stretch selling time.

Only a handful of companies have so far made a systematic study of how salesmen spend their time. But those that have done so report considerable benefits both to the salesmen and to the company. One company which made a time and duty study reduced selling costs almost 40%, while sales rose noticeably. The study was made by having time-study observers go along with the salesmen on thousands of calls and make a detailed record of actions and results.

Despite the necessary intangibles of selling, such a study pinpoints the areas of wasted time, evaluates various sales techniques and sales aids, measures the accuracy of sales territories, provides ratios of sales effort to orders received and many other facts of the selling job.

Fertilization of Range Clovers Looks Promising In California Trials

SACRAMENTO—Fertilization of range clovers to boost the capacity of more than 100,000 non-irrigated California acres to turn out fast growing calves and grass fat cattle is scoring a striking success.

Results of the second year's trials of this procedure have been tabulated by W. A. Williams, agronomist, who with W. E. Martin, soils specialist, and Walter H. Johnson, Placer County farm adviser, made the tests on the Walkinay Ranch near Lincoln, Cal.

Mr. Williams said that the best results were obtained from use of 600 lb. of single superphosphate every two years. Using that amount, extra forage was obtained at a fertilizer cost of \$4.60 per ton on a dry weight basis. Use of 300 lb. annually, which doubled the application cost, pro-

duced extra feed at the same fertilizer cost.

The researchers will not evaluate the statewide significance of their findings but at least three quarters of California's foothill ranges are known to be deficient in phosphate.

"We know repeat applications of phosphate after the first one at seeding, can pay off," said one researcher. "But we don't know yet where, when and how much in all cases."

The researchers also are working on a test to determine the phosphate needs of soil by measuring the phosphate content of clover growing on it.

URGES SIDE-DRESSING

KNOXVILLE, TENN.—Tennessee corn farmers have been urged to use nitrogen fertilizer as a crop side-dressing, by Dr. William D. Bishop, University of Tennessee extension agronomist. Dr. Bishop pointed out the use of 30 to 60 lb. of actual nitrogen can be expected to increase corn yields from 15 to 25 bu. per acre.



it's just off the press..!

Croplife's second edition of BUG OF THE WEEK a dealer's manual of insect pests

Here it is! The second edition of Croplife's Bug of the Week in 8½ x 11" booklet form. It's made up from reprints of the series appearing in Croplife during the past several months. The booklet includes 32 insect pests pictured and described—and all are in addition to the 21 which appeared in the original Bug of the Week booklet issued in 1954.

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You'll find many uses for this interesting, factual booklet. It's ideal for use by salesmen, dealers—and their customers.

Clad in an attractive cover, the booklet is packed with accurate information about these insects:

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Two-Spotted Mite
Cabbage Aphid
Rose Leaf Beetle
Potato Leafhopper

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Corn Rootworm
House Fly
Spotted Cucumber Beetle
Stink Bug
Yellow-Striped Armyworm
Blow-Fly
White-Fringed Beetle
Confused Flour Beetle

Corn Earworm
Leafhopper
Gypsy Moth
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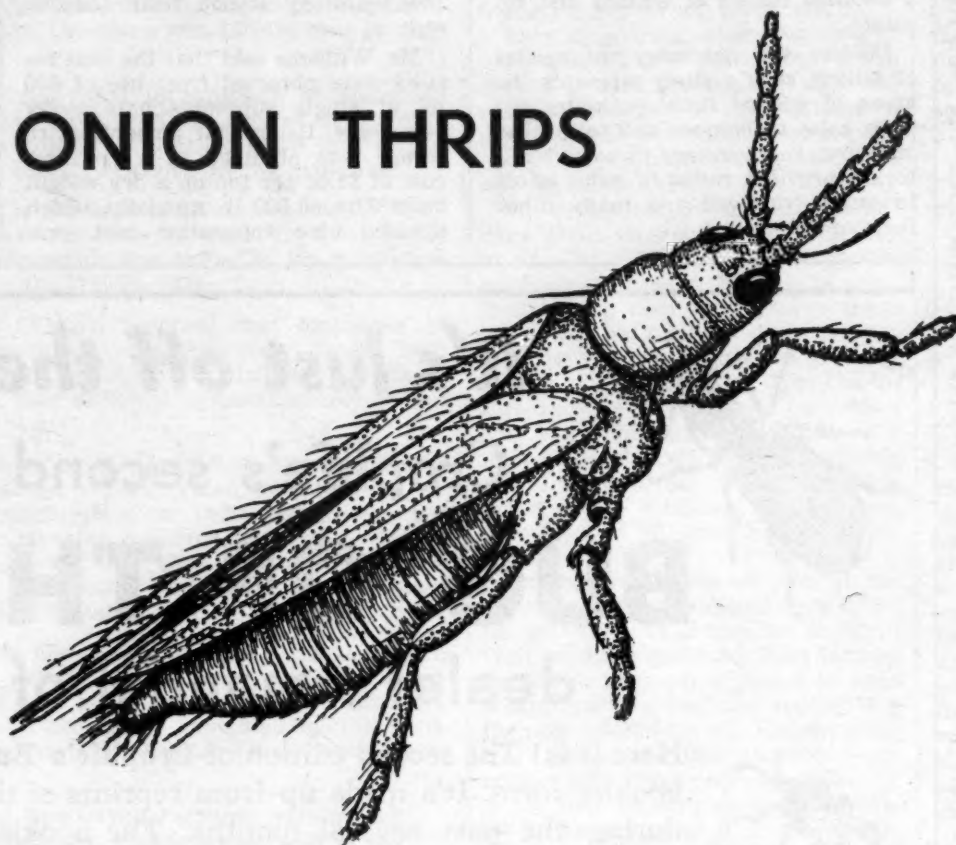
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ONION THRIPS



How to Identify

These thrips are rather slender, active insects, pointed at each end. Very minute, they are not easily seen with the naked eye, although some reach the length of about one-twenty-fifth of an inch. Their color is yellow.

Habits of Onion Thrips

Females, which have very slender wings, lay eggs within leaves or stems of plants, and these eggs hatch in about a week. In another two to four weeks, the nymphs become full grown after passing through four instars or periods of development. Two of these periods are spent in the soil without taking any food. As soon as they become adults, female thrips return to the plant and begin laying eggs to start another generation. Entomologists indicate that there are five to six generations a year, and that the bugs can be found in all stages together in the summer months.

Damage Done by Onion Thrips

These insect pests attack stems and leaves, sucking sap and giving the plant

a sick appearance. Tips of leaves become blasted and distorted and if the attack is prolonged, the entire plant may wither, turn brown in color and finally fall over. Dry seasons are the time of worst destruction, and entire fields can be destroyed by this tiny pest.

Control of Onion Thrips

A number of pesticidal materials have been named by USDA and state experiment stations, but the pest is difficult to reach because it is found in greatest numbers between the leaf sheaths and the stem, somewhat out of reach of the toxic material. After the pesticides have been applied in correct dosages and sufficient time allowed so that illegal residues will not be present at harvest time, some cultural practices are recommended. These include the raking up of onion tops after harvest, and burning them to dispose of onion thrips that might survive the winter otherwise. Local county and state authorities should be consulted for kinds and amounts of pesticides to be used for control of onion thrips, in order to avoid excessive residues.

Drawing of the Onion Thrips furnished Croplife by the artist, Marvin Frost, Jr.



The scene you see above is taking place in front of hundreds of stores throughout the Western states. It all started when United States Steel built an ultra-modern nitrogen plant at Geneva, Utah to produce USS Ammonium Nitrate, USS Anhydrous Ammonia and granular USS Ammonium Sulfate.

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USS Nitrogen Fertilizers



UNITED STATES STEEL

FERTILIZER CONSUMPTION

(Continued from page 1)

creased 46,699 tons (1.80%) to 2,643,418 tons, owing principally to the increase in the direct use of phosphate rock which is estimated to have contained an average of 32% of total P_2O_5 but only 3% of available P_2O_5 .

In 1955-56 the average primary nutrient content of fertilizers bearing primary nutrients was 28.29% as compared with 27.90% in 1954-55.

The data presented herein were compiled from manufacturers' reports of shipments to agents, dealers, distributors and consumers in the territories (except Alaska), the District of Columbia, and the states (except California, Florida, Massachusetts, Missouri, North Carolina, South Carolina, and Texas). For the latter seven states the data were compiled chiefly from the reports of the respective fertilizer control officials. No data were available for Alaska. Supplementary information was furnished by the control offices and other state agencies, as well as by fertilizer brokers, and special inquiries were made of all known distributors and custom applicators of anhydrous ammonia and nitrogen solutions.

The quantities are reported as 2,000-lb. tons. Although the data refer to shipments, the terms "consumption," "sales," and "shipments" are used synonymously. The actual consumption differs slightly, no doubt, from either the shipments or sales.

The consumption of the two classes of fertilizers (mixtures and materials) is summarized by states and regions in Table 1. In only two regions—the West South Central and Pacific—were slight gains made, while in the other regions consumption was lower by amounts ranging up to nearly 11% as compared with the preceding year (Table 1a). In 1955-56 approximately 64% of the decrease in fertilizer tonnage occurred in the three Atlantic coast regions. Among the other areas the West North Central region accounted for

the highest proportion (22.5%) of the decrease.

In Hawaii and in each of 16 states scattered through every region, the consumption of all fertilizers was higher in 1955-56 than in the preceding year. These units, which in 1955-56 accounted for 35.52% of the U.S. consumption of fertilizer, showed a total gain of 587,222 tons (7.45%) over their consumption in 1954-55.

Compared with the tonnages in each six-month period of 1954-55, most of the decrease in total consumption of fertilizers occurred in the January-June period of 1955-56. Consumption in this period was 461,424 tons (2.78%) lower, while in the July-December period consumption was 71,968 tons (1.17%) lower.

In Table 1, the percentage change in consumption of fertilizers in 1955-56 from the level in 1954-55 is based on the tonnage of primary nutrient containing fertilizers only, in order that a direct comparison may be made with the percentage change in the quantities of the primary nutrients themselves.

In 1955-56 the total consumption of commercial mixed fertilizers amounted to 14,775,653 tons, or 66.58% of the quantity of fertilizers. There were 1,536 grades reported. In addition, approximately 500 mixtures, not reported by grades, were used in California, and the quantities of an unknown number reported by manufacturers in other states.

The total consumption of mixed fertilizers in 1955-56 was 572,197 tons (3.73%) less than in the preceding year (Table 1a), and the quantity decreased in each of the regions except the Pacific which showed an increase of 3.78%.

In the continental U.S., there were 171 grades consumed in individual amounts of 3,000 tons or more (Table 2). These totaled 13,973,318 tons and accounted for 96.17% of the quantity of mixtures used on the continent. Other grades consumed in this area numbered 1,231 and amounted to 358,045 tons (2.46%). The balance

Table 1—Fertilizer Use, Year Ended June 30, 1956¹

State and Region	Mixtures			Materials ²			Grand total		Compared with year ended June 30, 1955	
	July 1 - Dec. 31, 1955	Jan. 1 - June 30, 1956	Total	July 1 - Dec. 31, 1955	Jan. 1 - June 30, 1956	Total	Tons	Percent	Fertilizers ³	N. avail. P_2O_5 & K_2O
Maine	10,654	167,361	178,015	1,436	3,036	5,322	183,337	101.	103	
New Hampshire	1,663	18,175	19,838	1,317	2,835	4,152	19,990	89	89	
Vermont	3,090	29,458	32,548	10,375	7,768	18,143	50,699	104	106	
Massachusetts	9,330	98,198	107,528	4,340	11,406	15,746	123,274	87	86	
Rhode Island	1,412	11,709	13,121	134	1,411	1,545	13,666	87	87	
Connecticut	6,852	66,350	73,202	3,451	13,048	16,499	89,701	87	87	
New England	30,992	314,202	345,194	20,251	36,438	56,689	401,883	92	92	
New York	111,067	381,950	493,017	26,455	54,953	81,408	574,425	91	91	
New Jersey	43,802	199,337	243,139	6,429	16,711	23,140	266,279	92	94	
Pennsylvania	170,594	414,943	585,537	21,699	45,625	67,324	652,861	90	90	
Delaware	12,303	87,130	99,433	2,034	3,692	5,726	105,159	93	93	
District of Columbia	449	1,326	1,775	297	859	1,156	2,931	90	90	
Maryland	66,383	190,673	257,056	5,475	10,270	15,745	272,801	89	89	
West Virginia	16,167	58,718	74,885	3,228	6,712	10,040	84,925	104	104	
Middle Atlantic	140,887	417,927	558,814	34,681	73,366	108,047	666,861	90	90	
Virginia	150,383	381,380	531,763	40,675	86,646	127,321	659,084	96	97	
North Carolina	200,189	1,150,965	1,351,154	49,003	101,361	150,364	1,501,518	90	90	
South Carolina	89,822	305,921	395,743	30,865	118,022	148,887	544,630	92	92	
Georgia	179,973	609,624	789,597	34,824	117,944	152,768	942,365	99	103	
Florida	305,782	629,672	935,454	26,038	83,840	109,878	1,045,332	109	109	
South Atlantic	1,125,186	3,714,349	4,839,535	202,397	504,513	706,910	5,546,445	97	97	
Ohio	293,130	690,167	983,297	16,388	40,206	56,594	1,039,891	97	97	
Indiana	225,030	580,973	805,993	16,408	41,572	57,980	863,973	90	97	
Illinois	146,542	366,395	512,937	30,146	74,525	104,671	617,608	112	88	
Michigan	170,897	409,624	580,521	13,005	30,941	43,946	624,467	103	103	
Wisconsin	65,282	154,619	219,901	9,870	22,242	32,112	252,013	96	100	
West North Central	905,851	2,474,380	3,380,231	131,039	304,292	435,331	3,815,562	100	99	
Minnesota	47,760	141,535	189,295	15,469	43,316	58,785	248,080	90	102	
Iowa	80,805	223,030	303,835	29,143	76,320	105,463	309,298	77	77	
Missouri	180,880	471,680	652,560	179,345	456,296	635,641	1,288,201	119	105	
North Dakota	2,866	20,920	23,786	7,981	55,310	63,291	87,077	110	115	
South Dakota	2,777	7,484	10,261	4,210	17,179	21,389	31,650	76	76	
Nebraska	3,708	16,802	20,510	22,196	90,884	113,080	133,590	64	79	
Kansas	46,209	202,565	248,774	68,113	312,070	380,183	628,957	89	93	
West North Central	306,991	811,504	1,118,495	101,577	266,507	368,084	1,486,579	94	90	
Kentucky	61,565	370,689	432,254	28,074	76,807	104,881	537,135	100	105	
Tennessee	88,799	321,409	410,208	29,888	76,043	105,931	516,139	97	103	
Alabama	136,387	479,436	615,823	49,168	161,999	211,167	827,020	95	99	
Mississippi	139,648	312,758	452,406	175,252	387,217	562,469	1,014,875	104	105	
East South Central	426,139	1,684,362	2,110,501	102,713	348,216	450,929	2,561,430	99	103	
Arkansas	89,879	145,352	235,231	29,888	150,806	180,694	315,925	109	117	
Louisiana	29,808	113,608	143,416	34,108	109,853	143,961	257,377	95	100	
Oklahoma	34,604	141,288	175,892	39,212	161,060	200,272	234,964	107	110	
Texas	87,622	352,131	439,753	106,128	427,172	533,300	973,053	96	107	
West South Central	182,076	524,013	706,089	102,025	348,046	450,071	1,156,160	100	107	
Montana	203	2,834	3,037	10,010	19,021	29,031	32,068	137	135	
Idaho	426	4,596	5,022	14,846	34,191	49,037	54,059	70	70	
Wyoming	66	1,773	1,839	1,078	8,062	9,140	10,979	100	90	
Colorado	2,750	9,889	12,639	8,400	33,109	41,509	54,148	111	113	
New Mexico	314	1,217	1,531	5,169	21,990	27,159	28,690	89	90	
Arizona	3,788	13,685	17,473	53,366	186,091	239,457	256,930	94	103	
Utah	976	3,950	4,926	3,339	12,099	15,438	20,364	111	117	
Nevada	477	570	1,047	1,158	2,083	3,241	4,289	170	156	
Mountain	9,302	38,274	47,576	27,575	110,284	137,859	185,435	90	99	
Washington	6,056	29,502	35,558	47,423	86,462	133,885	169,443	85	90	
Oregon	4,590	21,500	26,090	30,099	113,124	143,223	169,313	99	100	
California	85,331	161,143	246,474	620,267	1,071,029	1,691,296	1,937,770	107	110	
Pacific	90,953	182,645	273,598	769,049	1,174,138	1,943,187	2,216,785	104	106	
Continental U. S.	3,438,838	11,090,382	14,529,220	844,199	2,616,774	3,460,973	17,990,193	99	99	
Hawaii	3,780	30,603	34,383	40,941	29,750	70,691	105,074	106	107	
Puerto Rico	78,893	388,816	467,709	19,494	32,287	51,781	519,490	88	84	
Alaska	---	---	---	---	---	---	---	---	---	
Territories	107,075	1,202,419	1,309,494	60,439	92,045	152,484	1,461,978	90	91	
Total: 1955-56	3,545,913	11,292,794	14,838,707	904,638	2,708,819	3,613,457	18,452,164	99	99	
1954-55	3,621,098	11,725,958	15,347,056	2,904,601	7,778,612	10,683,213	26,030,269	100	100	
1953-54	3,700,022	12,171,054	15,871,076	2,603,399	6,699,024	9,302,423	25,173,499	101	96	

1/ Includes: Ground phosphate rock, basic slag, secondary and trace nutrient materials, such as, borax, sulfur, magnesium sulfate, etc., used as separate materials, also fertilizers distributed by Government agencies. Does not include liming materials, but includes gypsum. 2/ Does not include the quantities of materials used for manufacture of commercial mixtures. 3/ Fertilizers which were guaranteed to contain one or more of the primary plant nutrients (N, P₂O₅, K₂O). 4/ Data not available - estimated less than 1,000 tons. 5/ Revised by deletion of 737 tons of basic slag from Pennsylvania total and addition of 6,405 tons of gypsum to North Carolina total. 6/ Revised by deletion of 7,804 tons of basic slag from Pennsylvania total and addition of 1,072 tons of gypsum to North Carolina total.

(197,796 tons, 1.37%) represented mixtures not reported by grades.

Consumption of mixtures in Hawaii and Puerto Rico amounted to 246,494 tons in 168 grades. While many of the grades in Puerto Rico are similar to those used on the continent, most of those in Hawaii are designated in fractional numbers.

In 1955-56, four ratios of the primary nutrients (N:available P₂O₅:K₂O) accounted for 50.63% of the total consumption of mixed fertilizers in the continental U.S. (Table 2a). Individually, the proportions were 17.42, 14.88, 10.86 and 8.47% for the 1:4:4, 1:2:2, 1:1:1 and 1:3:3 ratios, respectively.

Table 2a—Ratios of Primary Nutrients of Mixed Fertilizers Consumed in Largest Tonnage in the Continental U.S., Year Ended June 30, 1956

Nutrient ratio ^a	Consumption tons	Proportion of quantity of all mixed fertilizers %
1:4:4	2,531,259	17.42
1:2:2	2,017,105	14.88
1:1:1	1,578,374	10.86
1:3:3	1,230,328	8.47
Total	7,357,066	50.63

^aN:available P₂O₅:K₂O.

The 15 grades consumed in largest tonnages in 1955-56 in each of the continental regions and Puerto Rico are shown in Table 3, together with the quantities for each state in the region. Excepting California, Colorado, Washington, Wyoming and the District of Columbia, these grades accounted for 50% or more of the total consumption of mixtures in each of the states and Puerto Rico. At least 12 of the grades were among

the 15 consumed in largest tonnages in each of the areas in the preceding year, but not always in the same order of tonnage.

Though 171 grades consumed in the continental U.S. represented 96.17% of the total tonnage of mixed fertilizers used in this area, 15 of these (Table 3) accounted for 62.56% of the tonnage. These 15 were the same as those in 1954-55 except that the 6-12-12 grade replaced the 4-8-8 grade.

The weighted average guaranteed nutrient content of the 15 grades was 4.80% nitrogen, 12.12% available P₂O₅, and 11.30% K₂O (total, 28.22%) as compared, respectively, with 4.51, 11.80 and 10.86% (total 27.17%) in the preceding year. The proportionate increase in the concentration of nitrogen and potash were higher than in that of P₂O₅.

In 1955-56 the 5-10-10 grade was consumed in largest tonnage, while in each of the preceding six years the 3-12-12 grade showed the largest consumption.

The consumption of mixtures by classes (N-P-K, N-P, P-K, N-K) for each region and the U.S. is shown in Table 5. Except for the Mountain region, N-P-K mixtures were used in much larger quantities than the other classes. More than 80% of the tonnage of all mixtures consumed in each of the other regions was of this class, while in the Mountain region

Table 1a—Regional Change in Consumption of Fertilizers in Year Ended June 30, 1956, From That in the Preceding Year

Region	Tons		Per cent	
	Mixtures	Materials ^a	Mixtures	Materials ^a
New England	17,491	5,890	-23.381	-4.79
Middle Atlantic	158,999	18,517	-177,516	-8.37
South Atlantic	88,742	49,700	-138,442	-1.80
East North Central	141,796	139,414	-2,382	-4.03
West North Central	102,598	17,376	-119,974	-7.99
East South Central	32,145	3,454	-35,599	-1.60
West South Central	5,093	7,052	+1,959	+7.2
Mountain	3,423	42,330	-45,753	-6.67
Pacific	11,259	37,249	-48,508	-3.78
Continental U. S.	-539,028	+46,448	-492,580	-3.58
Territories	-33,169	-7,643	-40,812	-11.86
Total	-572,197	+38,805	-533,392	-3.73

^aIncluding secondary and trace nutrient materials.

Table 2—Mixed Fertilizer Use by Grades

Grade	Consumption
-------	-------------

Includes collected phosphate the quantity of which is shown separately in Table 5, by regions. 1/ Includes an estimated 245,000 tons of dried manure. 2/ Not available, estimated less than 1,000 tons. 3/ Revised - 4,941 tons of basic slag was deleted from the Pennsylvania total. 4/ Revised - 21,086 tons of calcium sulfate (gypsum) was added to the North Carolina total. 5/ Withheld to avoid disclosing figures for individual establishments.

fate accounted for most of the tonnage of secondary and trace nutrient materials; the proportion was 94% (738,499 tons) in 1955-56.

The weighted average primary nutrient content of the various classes of materials consumed is given in Table 7. These averages are based on the composition and tonnage of

the individual materials comprising the respective classes.

In 1955-56 for materials containing only nitrogen, P_2O_5 or K_2O , the respective national averages were 32.35, 16.55 (available P_2O_5), and 55.64%, while the multiple-nutrient materials averaged 22.71%. The corresponding averages for these classes

Table 5—Kinds of Fertilizer Consumed, in Tons¹

Kind	Bay Region	Mid-Atlantic	South Atlantic	East North Central	West North Central	East South Central	West South Central	Mountain	Pacific	Territories	Total
MINERALS: H-P-E	322,051	1,639,349	1,434,561	3,120,395	560,485	1,823,729	619,680	23,462	246,214	209,360	13,117,844
H-P	81	881	2,321	24,434	1,751	13,778	40,169	22,028	55,032	5,777	1,077
P-E	26,064	99,980	216,965	229,583	46,035	153,070	29,688	272	2,408	3,187	846,619
H	0	178	105,245	0	28	8,073	804	84	3,823	29,730	282,653
CHEMICAL NUTRIENT MATERIALS											
Ammonia, anhydrous	3	1,679	16,780	36,385	85,864	61,677	91,128	28,976	90,778	2,003	1,318,154
Ammonia, non-20-26% N	21	0	670	20	3,140	0	2,815	9,865	237,857	53,005	3,009,456
Ammonium nitrate	3,926	26,119	96,420	109,265	163,735	203,621	127,309	36,514	96,780	41	940,665
Ammonium nitrate-limestone mixtures	171	8,235	26,348	1,685	173	43,492	667	137	0	0	213,520
Ammonium sulfate	251	2,632	6,743	0	2,791	37,461	1,028	16,222	121,971	54,971	1,358,980
Calcium cyanamide	1,808	8,671	13,639	3,421	171	14,860	15,524	970	7,318	0	65,812
Calcium nitrate	0	5	10,492	0	0	0	396	9,637	34,599	66	25,245
Nitrogen compounds: 20-41% N	295	4,117	27,150	16,781	27,808	1,796	7,453	5,783	18,429	242	242,804
Urea	1,723	11,008	320,200	1,423	0	1,796	19,188	179	886	0	1,358,980
Urea	979	8,049	5,381	15,504	6,677	1,048	13,239	15,321	88,707	8,538	96,373
Other	88	729	1,205	124	45	14	230	15	6,261	0	6,261
NATURAL ORGANIC MATERIALS											
Blood, dried	20	173	0	0	0	1	0	19	2,547	0	2,803
Clay, pumice	2,436	29	1,688	0	0	0	0	0	931	0	5,176
Compost	0	136	3	4,979	583	9	2,979	806	0	0	1,077
Crystallized sea/	7,143	2,277	0	0	16	0	0	0	0	0	9,411
Fish scrap, meal, scum	0	0	26	0	0	0	0	0	1,685	0	2,216
Manure, dried	4,379	16,972	2,774	6,107	8,806	1,067	3,122	1,480	247,259	9	887,075
Sewage sludge, activated	5,672	12,645	7,160	29,087	11,108	1,477	3,486	10,699	20,108	0	101,166
Sewage sludge, other	0	0	0	0	0	0	0	809	34,983	0	35,853
Sludge, animal	0	287	196	0	0	0	0	0	1,386	0	1,765
Sludge, process	2,886	9,182	3,920	297	5	4	0	980	30	0	1,358,980
Other	0	779	0	975	0	16	2	0	8,827	0	9,411
FERTILIZER MATERIALS											
Ammonium phosphate: 11-40/	0	7	0	3,747	80,974	0	2,841	3,351	14,399	2,409	47,158
" " 11-50/	0	0	0	1,113	30	0	2,841	3,351	0	0	2,666
" " 13-50/	0	0	0	1,984	16,967	0	13,649	5,008	6,411	0	46,127
Ammonium phosphate sulfate: 16-20/	0	0	0	408	50,666	210	26,130	36,402	50,903	831	251,946
Ammonium phosphate nitrate: 27-34/	0	0	0	0	666	0	0	107	2,846	0	7,159
Ammonium superphosphate/	0	0	0	268	0	0	0	0	0	1,819	0
Basic line	0	0	693	0	0	0	0	0	0	0	693
Basic slag	0	88	23,974	0	0	146,543	3,300	0	0	0	221,747
Bonemeal, raw	32	329	329	329	178	0	296	0	1,016	0	2,668
Bonemeal, steamed	1,472	4,972	1,463	0	597	184	0	1,454	0	0	10,741
Calcium metaphosphate	0	299	2,359	9,909	15,485	13,027	2,550	188	0	0	43,785
Diammonium phosphate: 21-53/	150	34	1,001	1,215	3,946	1,528	2,828	4,127	280	120	13,429
Phosphoric acid: 35-55% P ₂ O ₅	0	0	0	0	0	0	0	0	0	0	0
Phosphate rock	366	8,023	27,863	995,671	245,504	16,510	15,297	7,780	2,888	38	12,552,921
Colloidal phosphate	0	0	600	3,239	8,738	4,313	1,508	0	416	0	17,005
Precipitated bone	0	804	0	0	0	0	0	0	0	0	804
Superphosphate: 16%	3,743	11,666	20,346	23,379	17,604	19,139	0	518	828	0	99,225
" 19%	180	24	1,883	0	97	88	0	6,707	72,897	0	80,750
" 20-26%	27,477	71,084	38,487	46,460	31,810	69,695	79,558	2,938	5,333	0	461,730
" 21-41%	0	0	0	1,694	37	0	8,436	1,159	0	0	7,738
" 40-44%	0	0	0	0	86,170	0	33	33,936	10,365	0	71,666
" 44-48%	73	737	39	31,123	6,375	1,565	38,117	16,705	1,629	0	156,454
" 48-54%	0	8	0	7,484	17,372	1,864	15,463	13,666	1,645	60	78,000
" 47%	0	90	80	1,130	3,680	254	38	0	0	0	5,610
" 48%	7	9	449	901	540	2,787	1,016	0	117	0	10,716
" 49-50%	0	0	15	420	561	1,132	1,189	0	0	0	3,367
Other	0	0	188	0	0	0	0	0	0	0	188
TOTALE MATERIALS											
Carbon ball, ash	630	0	311	0	0	0	0	0	0	0	941
Line-phosphoric acid	1,093	20	138	0	0	0	0	0	0	0	1,231
Limestone salts: 20-30% K ₂ O	0	10	717	25	0	0	0	0	0	0	972
Potassium chloride: 40-50% K ₂ O	2	224	5,308	1,328	1,170	1,321	2,436	10	1,886	0	13,181
" " 20-25% K ₂ O	1,709	2,698	34,761	125,447	38,387	51,818	39,078	581	5,309	14,718	309,432
" " magnesium sulfate	316	598	2,600	1,666	666	1,000	0	0	0	0	6,688
" " sodium nitrate/	0	0	157,700	0	0	38	849	0	0	0	20,680
" " sulfate	179	674	7,187	1,088	1	704	99	1,340	5,493	1,777	16,257
Other	0	0	6,111	0	0	0	0	0	0	0	6,111
PRIMARY NUTRIENT FERTILIZERS	415,942	1,939,264	5,895,893	4,518,599	2,061,947	2,890,690	1,366,256	359,599	1,596,313	399,562	22,103,405
SECONDARY & TRACE NUTRIENT MATERIALS											
Aluminum sulfate	8	10	2	0	0	0	0	0	0	86	106
Boric/	43	248	746	164	42	384	22	0	0	369	2,077
Calcium sulfate (gypsum)	143	2,866	96,353	2,058	2,960	2,286	16,282	16,282	681,260	99	20,740,919
Copper sulfate/	0	36	42	0	15	0	0	0	5	133	606
Ferrous sulfate/	0	0	42	0	0	0	0	0	0	0	42
Magnesium sulfate/	89	114	1,983	0	0	0	0	0	34	0	2,111
Manganese sulfate	0	143	292	15	901	0	0	0	30	0	1,308
Mixed minerals	8	0	4	0	0	5	3	300	3,650	0	3,954
Sulfur: 20-50% S	10	70	160	38	49	2	2,024	2,536	25,041	0	27,541
Sulfuric acid: 40-55% S	0	0	0	0	0	0	4,346	0	4,346	0	8,692
Sink sulfate/	0	20	132	1	5	28	8	12	1,288	28	2,085
SECONDARY & TRACE NUTRIENT MATERIALS	315	3,733	96,514	2,445	2,378	1,700	2,555	20,137	671,072	2,956	789,605
ALL FERTILIZING	416,257	1,942,997	5,992,407	4,521,044	2,064,325	2,902,390	1,368,811	379,736	1,597,355	399,518	22,131,010

1/ Includes distributions by Government agencies. Does not include the quantities of materials used for the manufacture of the indicated quantities of hybrid mixtures. 2/ Seed and Fertilizer Report, 1953, 775 tons. 3/ 68,510 tons. 4/ 39,493 tons. 5/ 1,765 tons. 6/ Distributed by manufacturers of fertilizers. 7/ Average: 4.07-2.14-0.66. 8/ Includes quantities reported as mixtures. 9/ All quantities totalling 1,775 tons by error, left in mixtures. Their State totals are listed in Table 3. 10/ Additional quantities may have been reported as mixtures. 11/ 7,513 tons. 12/ 29 tons available for export. 13/ Additional quantities are given free to farmers for which no records are kept. 14/ 1,418 tons. 15/ 29 tons. 16/ 17 tons. 17/ 17 tons. 18/ 17 tons. 19/ 17 tons. 20/ 17 tons. 21/ 17 tons. 22/ 17 tons. 23/ 17 tons. 24/ 17 tons. 25/ 17 tons. 26/ 17 tons. 27/ 17 tons. 28/ 17 tons. 29/ 17 tons. 30/ 17 tons. 31/ 17 tons. 32/ 17 tons. 33/ 17 tons. 34/ 17 tons. 35/ 17 tons. 36/ 17 tons. 37/ 17 tons. 38/ 17 tons. 39/ 17 tons. 40/ 17 tons. 41/ 17 tons. 42/ 17 tons. 43/ 17 tons. 44/ 17 tons. 45/ 17 tons. 46/ 17 tons. 47/ 17 tons. 48/ 17 tons. 49/ 17 tons. 50/ 17 tons. 51/ 17 tons. 52/ 17 tons. 53/ 17 tons. 54/ 17 tons. 55/ 17 tons. 56/ 17 tons. 57/ 17 tons. 58/ 17 tons. 59/ 17 tons. 60/ 17 tons. 61/ 17 tons. 62/ 17 tons. 63/ 17 tons. 64/ 17 tons. 65/ 17 tons. 66/ 17 tons. 67/ 17 tons. 68/ 17 tons. 69/ 17 tons. 70/ 17 tons. 71/ 17 tons. 72/ 17 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Table 6—Consumption of Primary Plant Nutrients¹

State & Region	Content of mixtures					Content of all fertilizers ^{2/}				
	Nitrogen	P ₂ O ₅	K ₂ O	Total N, avail. P ₂ O ₅ , and K ₂ O		Nitrogen	P ₂ O ₅	K ₂ O	Total N, avail. P ₂ O ₅ , and K ₂ O	
	Available					Available				
Maine	13,625	20,478	31,591	22,110	56,807	14,009	21,114	22,227	22,152	57,475
New Hampshire	1,879	1,554	1,686	1,646	3,969	1,045	8,999	9,426	1,717	4,977
Vermont	1,170	1,071	1,148	1,148	3,468	8,698	1,148	1,148	1,148	3,468
Massachusetts	3,462	5,758	6,004	5,640	15,227	4,975	6,741	7,083	6,096	17,812
Rhode Island	737	1,348	1,394	1,376	3,463	892	1,440	1,480	1,422	3,774
Connecticut	3,298	4,852	5,112	4,732	13,282	4,393	6,292	6,583	6,292	16,967
New England	21,518	30,245	41,206	41,751	104,206	27,146	37,559	39,633	43,349	117,910
New York	30,730	37,833	61,659	48,487	137,050	38,096	66,132	70,566	49,501	153,735
New Jersey	13,370	25,537	36,351	29,197	64,064	15,888	27,083	28,111	25,686	68,677
Pennsylvania	30,448	70,259	73,017	67,367	168,148	35,554	78,044	86,343	68,088	181,686
Delaware	4,498	9,758	9,795	9,986	24,286	5,208	10,146	10,146	10,146	25,500
District of Columbia	125	167	180	94	366	162	208	223	97	487
Maryland	12,309	29,677	31,521	27,159	69,140	14,332	30,687	33,043	27,515	75,534
Virginia	9,515	21,025	21,722	19,229	41,266	10,558	23,202	24,585	20,881	54,626
Middle Atlantic	96,561	202,013	232,262	185,694	466,170	113,039	222,205	235,261	188,673	526,116
Virginia	29,861	74,554	79,595	72,173	172,586	38,508	76,895	82,382	75,010	190,413
North Carolina	54,349	126,859	136,917	122,705	303,943	109,598	130,266	142,114	130,678	371,202
South Carolina	21,933	62,144	66,600	59,098	143,175	61,045	65,164	70,055	71,949	200,138
Georgia	46,266	100,912	110,153	103,412	259,646	111,778	130,811	138,081	130,811	309,503
Florida	69,723	81,691	99,528	100,884	251,320	86,185	85,122	102,776	100,508	275,835
South Atlantic	211,130	448,222	526,921	528,232	1,119,632	385,781	462,881	521,765	490,446	1,346,112
Ohio	47,064	134,393	148,428	138,410	333,867	57,672	139,456	149,512	134,705	331,833
Indiana	34,661	144,461	149,348	144,238	328,189	59,138	159,133	169,532	149,532	388,727
Illinois	30,448	73,555	78,779	77,308	183,131	72,784	119,596	129,889	116,219	298,010
Michigan	31,597	87,904	91,360	89,148	207,649	39,584	90,841	95,029	89,381	219,746
Wisconsin	15,627	51,355	53,771	50,687	124,225	29,811	58,675	56,712	75,174	124,859
West North Central	152,697	503,068	534,075	518,163	1,283,915	222,925	568,005	598,671	548,177	1,435,177
Minnesota	25,691	66,493	64,777	65,883	158,051	40,787	100,775	106,005	100,000	247,792
Iowa	20,628	56,969	59,507	59,304	116,500	43,817	81,143	87,055	84,938	169,828
Missouri	36,752	94,338	68,653	54,161	125,372	73,396	80,189	132,188	66,970	217,555

1/ Includes Government distribution. 2/ Total in mixtures and direct application materials. 3/ Including 2 percent of the colloidal phosphate and 3 percent of the phosphate rock marketed for direct application. 4/ Including 22 percent of the colloidal phosphate and 32 percent of the phosphate rock marketed for direct application. 5/ Data not available - estimated total plant nutrients in all fertilizers amounted to 700 tons. 6/ Revised by deletion of 702 tons of available P_2O_5 from the Pennsylvania total. 7/ Revised by deletion of 830 tons of total P_2O_5 from the Pennsylvania total.

Table 6a—Per Cent of Increase or Decrease in Consumption of Primary Nutrients—Year Ended June 30, 1956, as Compared With Preceding Year

Region	N		—Available P ₂ O ₅ —		—Total P ₂ O ₅ —		—K ₂ —		—Total (N, avail.— P ₂ O ₅ , K ₂ O)	
	Mixtures	Materials	Mixtures	Materials	Mixtures	Materials	Mixtures	Materials	Mixtures	Materials
New England	+ 0.25	— 7.14	— 0.31	— 2.51	— 1.34	— 4.11	— 4.78	— 15.87	— 2.03	— 5.69
Middle Atlantic	— 5.85	— 13.11	— 7.22	— 7.78	— 7.18	— 9.38	— 4.65	— 1.29	— 5.98	— 9.83
South Atlantic	— .99	— 5.13	— 1.55	+ .27	— 1.40	+ 7.27	+ 1.10	— 4.74	— .38	— 4.88
East North Central	+ 5.74	— 7.88	— 2.24	+ 2.74	— 2.78	+ 32.57	— 2.54	+ 2.84	— 1.38	— 1.78
West North Central	— 9.53	— 14.27	— 6.90	— 5.87	— 6.22	+ 15.96	+ 1.46	+ 6.12	— 4.86	— 11.01
East South Central	+ .63	+ 3.27	+ 2.53	— 1.91	+ 1.94	+ 2.36	+ 5.48	— 3.18	+ 3.28	+ 1.46
West South Central	+ 7.23	+ 10.86	+ 8.71	+ 4.34	+ 6.23	+ 4.17	+ 7.00	+ 11.33	+ 7.84	+ 9.15
Mountain	— 1.95	— 2.86	— 4.44	+ 1.21	— 5.31	— .19	+ 6.70	+ 31.26	— 2.41	— .86
Pacific	+ 1.04	+ 5.28	+ 7.80	+ 7.13	+ 7.51	+ 6.12	+ 14.92	— 2.43	+ 6.92	+ 5.37
Continental U.S.	— .43	— 1.66	— 1.94	— .11	— 2.32	+ 14.18	— .03	+ .98	— .92	— .95
Territories	— 10.82	— 7.94	— 5.79	+ 7.92	— 7.72	+ 18.04	— 7.83	+ 6.97	— 8.60	+ 3.56
U.S. and territories	— .86	— 1.82	— 1.98	— .05	— 2.37	+ 14.20	— .18	+ 1.24	— 1.07	— 1.01

Table 7—Weighted Average Plant Nutrient Content

State and Region	Mixtures ^{2/}				Materials				Average nutrient content of mixtures and materials	
	Available P ₂ O ₅	K ₂ O	Average nutrient content	Single nutrients ^{3/}		Multiple nutrients ^{4/}	Average nutrient content			
				N	Available P ₂ O ₅			K ₂ O		
Maine	7.65	11.50	12.42	31.57	29.80	20.26	55.77	20.14	23.75	31.55
New Hampshire	6.32	12.76	13.52	32.60	27.59	22.02	55.08	11.28	23.40	29.75
Vermont	9.20	13.74	16.86	36.50	32.80	21.08	59.42	11.46	22.04	31.33
Massachusetts	6.54	9.84	9.69	26.07	18.27	19.11	58.80	10.95	16.30	21.33
Rhode Island	9.62	10.27	10.49	26.38	19.40	19.37	59.02	9.95	16.49	25.20
Connecticut	6.18	9.28	10.25	22.81	22.37	23.79	56.52	12.62	18.20	23.71
New England	6.77	11.29	12.01	30.07	23.03	21.28	57.68	12.26	19.60	28.35
New York	6.24	11.74	9.84	27.82	25.75	20.22	54.11	9.71	20.69	26.82
New Jersey	5.59	10.68	10.52	26.79	24.45	18.04	56.80	13.13	20.62	26.19
Pennsylvania	5.21	12.01	11.51	28.13	28.75	17.32	58.15	11.95	20.76	27.94
Delaware	6.25	11.65	12.28	28.99	33.41	23.03	60.78	9.37	21.77	29.16
Washington of Columbia	7.04	9.41	5.30	21.75	19.66	20.39	0	11.99	13.18	17.16
Maryland	4.63	11.17	10.22	26.02	28.32	16.61	21.58	12.37	21.92	23.80
West Virginia	4.22	12.16	10.32	26.70	22.38	21.30	61.25	10.78	21.52	26.59
Middle Atlantic	5.42	11.61	10.68	27.71	26.76	19.45	43.99	13.25	21.04	27.01
Virginia	3.84	11.08	10.73	25.65	21.47	22.60	14.59	19.58	20.07	25.01
North Carolina	4.02	9.39	9.00	22.49	21.42	16.14	39.03	14.74	22.07	22.42
South Carolina	3.56	10.10	9.61	23.27	20.35	15.07	56.68	20.33	23.27	23.27
Georgia	4.23	10.21	10.35	24.49	24.44	18.56	57.09	18.72	24.31	24.77
Florida	5.73	6.80	8.39	20.32	22.60	8.07	70.71	17.61	18.49	28.58
South Atlantic	4.40	9.26	9.47	23.13	21.52	15.11	40.30	19.10	22.26	22.98
Ohio	4.78	13.64	13.44	31.86	33.61	20.15	54.75	13.26	27.80	31.40
Indiana	5.41	15.70	15.66	36.77	41.96	21.27	61.09	29.97	42.05	37.66
Illinois	5.91	14.67	15.01	35.59	38.35	6.53	60.93	17.42	15.71	23.24
Michigan	5.46	15.19	15.23	35.68	35.28	18.99	70.41	10.38	25.06	35.05
Wisconsin	3.28	16.15	18.29	39.02	42.32	14.26	58.04	11.81	35.13	38.78
East North Central	5.15	14.51	15.21	35.27	38.27	7.92	60.45	15.46	20.67	31.60
Minnesota	5.16	21.60	15.85	42.62	59.62	43.11	59.74	37.26	48.90	43.94
Iowa	6.61	18.63	18.86	38.09	45.55	35.97	55.17	37.45	37.42	37.42
Missouri	6.08	14.39	11.91	34.38	43.27	5.48	59.81	28.64	17.80	26.85
North Dakota	8.75	28.10	6.00	42.85	38.55	45.75	60.46	51.95	49.12	46.95
South Dakota	10.67	28.85	1.82	37.34	51.49	39.77	62.37	42.95	44.31	41.84
Nebraska	10.18	21.10	3.75	35.03	56.10	42.23	61.74	44.15	52.45	49.76
Kansas	10.08	21.46	5.44	36.98	51.89	40.17	60.45	41.02	41.34	39.70
West North Central	7.12	18.20	12.35	37.74	48.64	12.86	52.92	43.73	31.46	35.21
Kentucky	4.66	11.73	11.54	27.93	34.70	23.10	55.12	38.83	32.13	28.73
Tennessee	5.01	11.80	11.09	27.50	37.64	2	56.46	37.64	29.79	29.79
Alabama	5.93	10.73	8.43	23.11	24.66	12.25	58.75	34.88	20.62	22.20
Mississippi	5.73	9.58	8.18	23.59	37.47	12.16	56.79	35.73	22.59	27.19
East South Central	4.62	11.00	9.62	25.24	32.66	15.30	58.19	31.07	29.00	26.11
Arkansas	6.19	12.88	12.91	31.98	38.04	36.54	60.08	36.62	41.71	37.02
Louisiana	6.48	13.03	10.23	29.74	40.00	17.97	57.98	38.65	36.01	32.63
Oklahoma	7.42	16.43	6.75	30.60	40.61	23.23	79.08	40.91	29.67	30.19
Texas	7.67	14.84	7.37	29.88	45.13	28.07	57.21	38.07	38.33	34.02
West South Central	7.00	14.10	9.35	30.45	41.04	26.25	52.71	38.17	38.03	34.13
Montana	9.98	21.14	.96	32.08	36.58	43.31	60.40	43.76	41.73	40.60
Idaho	14.05	16.11	2.66	32.82	35.70	40.47	60.89	39.78	38.12	37.63
Wyoming	10.93	23.06	1.45	35.98	32.77	41.35	59.46	41.86	38.12	42.78
Colorado	11.12	19.13	6.12	36.37	38.41	45.20	57.18	44.05	42.33	40.98
New Mexico	14.64	18.00	2.97	35.29	61.10	35.34	60.40	48.89	43.92	43.75
Arizona	13.95	16.78	3.12	33.85	37.06	33.13	54.45	32.76	35.87	35.62
Utah	10.36	12.75	3.67	26.78	34.43	40.40	60.40	44.43	37.73	36.11
Nevada	7.83	11.18	4.80	23.21	23.23	40.05	0	30.80	29.26	27.47
Mountain	12.38	17.42	3.66	33.46	37.24	40.82	56.16	36.69	38.68	37.98
Washington	7.86	14.64	11.02	33.52	37.90	24.29	58.61	32.90	37.21	36.37
Oregon	8.64	15.62	9.67	33.93	28.71	31.71	60.69	38.17	33.62	31.36
California	10.51	10.59	6.18	27.12	30.20	26.20	54.20	12.73	23.02	24.10
Pacific	10.04	11.42	7.05	28.51	30.25	27.09	57.01	15.11	25.41	26.01
Continental U. S.	5.28	12.18	11.19	28.65	32.69	16.53	55.47	22.60	27.42	28.27
Hawaii	11.86	7.99	16.85	36.70	23.15	20.28	59.59	57.69	29.96	32.66
Puerto Rico	11.77	5.96	10.08	27.81	23.54	21.61	55.50	22.00	23.58	26.87
Alaska ^{2/}	---	---	---	---	---	---	---	---	---	---
Territories	11.79	6.50	11.87	30.16	23.31	20.48	52.24	46.90	27.75	29.25
U. S. Average:										
1950-56	5.39	12.08	11.90	28.67	32.35	16.55	55.64	22.71	27.43	28.25
1954-55	5.24	11.86	10.82	27.90	31.00	19.37	54.56	21.64	27.88	27.00
1953-54	5.01	11.54	10.32	26.87	30.81	15.70	54.01	17.53	25.99	26.01

1/ Excluding materials not guaranteed to contain one or more of the primary plant nutrients, N, P₂O₅, or K₂O. 2/ Guaranteed to contain two or more of the primary plant nutrients. 3/ Guaranteed to contain one of the primary plant nutrients. 4/ Including 2 percent of the colloidal phosphate and 3 percent of the phosphate rock marketed for direct application. 5/ Not available. 6/ Revised: See table 6, footnote 6 for basis of revisions.

in 1954-55 were 31.00, 19.37 (revised) 54.56 and 21.64%.

That the national averages for most of the classes were higher in 1955-56 than in the preceding year reflects generally the greater use of the higher analysis products. The lower average for available P_2O_5 results from the large increase in the tonnage of phosphate rock which contains only 3% of available P_2O_5 .

The quantities of primary nutrients in fertilizers are based on the average analyses of samples of the various products as published by fertilizer control official for the state in which they were consumed, rather than on the manufacturers' guarantees. Thus, the overruns or under-runs of nutrients from the guarantees are taken into account. This gives more nearly the actual ton-nages of nutrients than would be the case if only the guarantees were used. The actual nutrient content usually averages somewhat higher than the guarantee.

In 1955-56 the primary nutrient content of fertilizers (mixtures and direct application materials) comprised 1,932,603 tons of nitrogen, 2,247,420 tons of available P_2O_5 (2,643,418 tons of total P_2O_5), and 1,874,718 tons of K_2O (Table 6). Compared with the preceding year, consumption of these nutrients decreased by 27,933 tons (1.42%) of nitrogen, 36,240 tons (1.59%) of available P_2O_5 , and 225 tons (0.01%) of K_2O , while total P_2O_5 increased 46,699 tons (1.80%). Although the consumption of fertilizers bearing these nutrients in 1955-56 was 2.42% below that in 1954-55, the total quantity of the nutrients (nitrogen, available P_2O_5 ,

K₂O) themselves was only 1.05% lower.

Mixed fertilizers supplied 41.22% of the nitrogen, 79.43% of the available P_2O_5 (71.79% of the total P_2O_5), and 88.28% of the K_2O . The respective quantities of these nutrients consumed as mixed fertilizers were 0.86, 1.98, 2.37 and 0.18% lower than in the preceding year. While the tonnage of mixed fertilizers in 1955-56 was 3.73% lower than that in 1954-55, the total quantity of nutrients (N, available P_2O_5 , K_2O) contained therein was only 1.07% lower.

Fertilizer materials for direct application supplied 58.78% of the nitrogen, 20.57% of the available P_2O_5 (28.21% of the total P_2O_5),

Material	Nitrogen, year ended June 30		Change Change
	1955	1956	
Ammonia,			
Anhydrous	290,337	343,578	+53,241
Aqua	46,617	62,510	+15,893
Ammonium nitrate	375,318	316,964	-58,354
Ammonium nitrate-limestone mix.	73,753	54,776	-8,977
Ammonium sulfate	109,245	86,878	-22,367
Calcium cyanamide	14,121	13,515	-606
Calcium nitrate	8,667	8,630	-37
Natural organic materials	13,804	13,204	-600
Nitrogen solutions	38,362	34,493	-3,869
Phosphate materials	52,973	56,976	+4,003
Potash materials ..	2,525	3,153	+628
Sodium nitrate ..	99,463	87,699	-11,764
Urea	30,973	41,785	+10,812
Other chemical nitrogen materials	837	1,769	+ 932

Table 6c—Available P₂O₅ Consumed in Direct Application Materials—Years Ended June 30, 1955, and 1956 (in tons)

Material	Available P ₂ O ₅ year ended June 30		Change
	1955	1956	
Ammonium phosphate:11-48 ..	18,241	23,265	+ 5,024
Ammonium phosphate:13-39 ..	14,574	16,568	+ 1,994
Ammonium phosphate-sulfate:16-20	53,240	52,295	- 945
Basic slag	12,252	14,115	+ 1,863
Calcium metaphosphate ...	27,100	26,786	- 314
Diammonium phosphate:21-53 ..	1,508	7,523	+ 6,015
Natural organic materials	12,282	9,740	- 2,542
Phosphate rock and colloidal phosphate	17,924	27,757	+ 9,833
Phosphoric acid	7,669	7,515	- 154
Potash materials ...	211	73	- 138
Superphosphate:			
22% and under ..	137,878	122,500	- 15,378
Over 22%	183,528	147,622	- 35,906
Other phosphates ...	6,166	6,588	+ 422
Total	420,528	462,347	+ 41,819

Table 6a—K ₂ O Consumed in Direct Application Materials—Years Ended June 30, 1955 and 1956 (in tons)			
Material	1955	1956	Change
Cotton hull ashes ..	279	368	+ 89
Lime-potash mixtures	1,477	1,418	- 59
Manure salts	551	246	- 305
Natural organic materials	7,789	5,838	-1,951
Potassium chloride ..	190,258	194,754	+4,496
Potassium mag- nesium sulfate ...	1,418	1,480	+ 62
Potassium sodium nitrate	1,996	2,518	+ 522
Potassium sulfate ..	12,764	12,926	+ 162
Wood ashes	144	129	- 15
Other potash materials	403	89	- 314
Total	217,079	219,766	+2,687

and 11.72% of the K₂O. The quantities of nitrogen and available P₂O₅ consumed as fertilizer materials were, respectively, 1.82 and 0.05% lower, while the quantities of total P₂O₅ and K₂O were, respectively, 14.20 and 1.24% higher than in the preceding year.

Although the tonnage of materials bearing these nutrients increased 0.62% over that in 1954-55, the total quantity of nutrients (N, available P₂O₅, K₂O) supplied thereby decreased 1.01%. In 1955-56 the increased consumption of phosphate rock was largely responsible for the increase in the tonnage of materials and of total P₂O₅. The phosphate rock used for direct application averages 32% total P₂O₅ but only 3% available P₂O₅.

The percentage difference in the quantity of primary plant nutrients in fertilizer mixtures and materials used in 1955-56, as compared with the quantity in the preceding year, is shown by regions in Table 6a. The West South Central region was the only region in which increases occurred in the quantities of each of the nutrients in both mixtures and materials. In 1955-56 the total quantity of primary nutrients in the mixed fertilizers used in the U.S. and territories decreased 1.07%; nitrogen, available P₂O₅, and K₂O decreased 0.86, 1.98 and 0.18%, respectively. In the case of fertilizer materials the total quantity of nutrients decreased 1.01%; nitrogen and P₂O₅ also decreased—1.82 and 0.05%, respectively—but K₂O increased 1.24%. Tables 6b, 6c and 6d show the quantities of primary nutrients in the materials applied directly as fertilizers in the years ended June 30, 1955 and 1956.

California Seed Growers Had Poor Year in 1956

SACRAMENTO—Late rains, uncertainty over federal farm programs and heavy carryover inventories from the 1955 alfalfa and clover seed crops contributed in 1956 to a generally poor marketing year for California seed growers.

Evert Vander Meulen, general manager of Calapproved Seed Growers Assn., in his annual report to members, said that many other factors such as tight money and unexpectedly high production in California also added to the industry's troubles.

He reported that certified alfalfa seed production in California last year was 48,947,000 lb. and even higher production is anticipated this year.

Mr. Vander Meulen was pessimistic about the outlook for Ladino clover for the next two years. He said the market collapsed last February when about 2,500,000 lb. of seed from the California crop of 4,770,000 lb. remained unsold, adding to the carryover of previous years. He estimated the 1957 Ladino crop at about 4,500,000 lb.

Sudan seed markets remained in a healthier condition, Mr. Vander Meulen said, and the association sold all of its 1956 crop and the carryover from 1955. The 1957 production is estimated at slightly more than 1956 but less than 1955.

AGRONOMIST NAMED

ST. PAUL—William F. Hueg, Jr., East Lansing, Mich., has been named extension agronomist at the University of Minnesota.

University of Arizona Begins Mobile Program Of Farm Research

TUCSON—Instead of taking the information from the research laboratory to the farms, scientists at the University of Arizona are now taking the information from the farms to the laboratory.

The mobile unit of the department of agricultural chemistry and soils of the Agricultural Experiment Station is in operation now, with its program well under way, according to Lyman R. Amburgey, extension soils specialist for the University of Arizona.

Heading this concept of agricultural research is Dr. T. C. (Curt) Tucker, who has pushed the project through to completion from its inception. In cooperation with county agricultural agents, Dr. Tucker and his co-worker, Jim Abbott, are establishing experiments on farms of cooperating growers in addition to their regular work on the Agricultural Experiment Station farms.

Experiments have been set up in five Arizona counties: Cochise—cotton, corn, and two sorghum plots; Maricopa—three cotton and two sorghum plots; Pima—one sorghum plot; Pinal—three cotton plots and one sorghum plot; and Yuma—one sorghum and three cotton plots. Essentially these experiments were set up to determine the need for nitrogen and phosphorus and the amount needed by these crops. In four of these experiments the forms of nitrogen and phosphorus are being studied as well as the rates. County agents in the various counties will be holding field days on some of these farms later in the season to show results to growers in the areas.

INSECT NOTES

(Continued from page 5)

more numerous than usual. Tobacco budworms are laying large numbers of eggs, and moderate to severe damage is expected.

Boll weevils are expected to cause severe damage in many areas this year. Frequent rains have made treating on schedule a real problem. —H. E. Scott.

Codling Moth Population Develops in New Jersey

NEW BRUNSWICK, N.J.—Increased populations of codling moth were observed in Jersey, with peak entry of worms in apples expected toward the latter part of June. The peak was to be in the southern counties.

Although neighboring Delaware has reported bacterial spot on peaches, none was seen in the Jersey orchards visited the middle of June. The first cases of powdery mildew on fruit appeared in Camden and Burlington counties.

Armyworms have been numerous in Cumberland County area. Growers have been given specific instructions for control methods.—Spencer H. Davis, Jr. and Leland G. Merrill, Jr.

HOPPER OUTBREAK SEEN

SACRAMENTO—Elvin Mankins, Tulare County agricultural commissioner, predicts that an all out grasshopper control program will be necessary in his county next year. He said that a spray program to kill insects now would aid in holding down next year's insect population. He reported an inspection showed the heaviest infestations are south of Lemon Cove and in the Allens Gap area.

GREYHOUND DIRECTOR

CHICAGO—Hans Stauffer, president of Stauffer Chemical Co., has been elected a director of the Greyhound Corp.



PLANNING COMMITTEE—Members of the planning committee for the Southwestern Fertilizer Conference and Grade Hearing are shown above following a session in Galveston, Texas. In the front row, from left to right, are Mrs. Don Miller, Houston; Mrs. James Dawson, Houston; Mrs. Stanley Hackett, Shreveport; Mrs. W. S. Tyler, Sulphur Springs, Texas, and Mrs. Harold Trammell, Texarkana, Texas. Standing are J. D. Dawson, Jr., Fidelity Chemical Corp., Houston; Harold Trammell, Farmers Fertilizer Co., Texarkana, Texas; Dr. J. F. Fudge, Texas state chemist, College Station, Texas; W. S. Tyler, Longhorn Construction Co., Sulphur Springs, Texas; Stanley Hackett, Dixie Fertilizer Co., Shreveport; Don Miller, Armour Fertilizer Works, Houston, and Jimmie Powledge, Buccaneer Hotel, Galveston. Not pictured is Jack Lindsey of International Minerals & Chemical Corp., Shreveport, who was operating the camera. The 1957 conference and grade hearing will be held July 17-19 at the Buccaneer Hotel in Galveston. See page 8 of the June 10 issue of Croplife.



NEW OFFICERS APPOINTED—The Frank G. Hough Co., Libertyville, Ill., has announced the advancements of three men within its financial section. Robert L. Smith has been made secretary and treasurer of the company. He has been with the firm for more than 11 years and was formerly assistant secretary and assistant treasurer. Frank M. Docauer, former staff assistant, has been made assistant secretary. During his 14 years with the company, he has also been chief cost accountant. Fenton O. Richards has been elected controller of the company. He has been with the Hough company for 12 years and was formerly assistant manager of the cost department.



Beaird Promotes Three in Sales

SHREVEPORT, LA.—Melvin A. Finuf, who has been assistant general manager of sales since August, 1946, has been promoted to general manager of sales at the J. B. Beaird Co., Inc., Shreveport, La., John L. Tullis, vice president of sales, has announced.

Mr. Finuf joined Beaird in 1935 in the pattern shop and served throughout the plant, moving up to plant engineer, superintendent of the machine shop, the forge plant, tank divisional sales manager and assistant sales manager before his appointment as assistant general manager of sales in 1946.

Gerald Pope and J. R. Sims have

been advanced to key positions at the company.

Mr. Pope, who has been district sales manager of Beaird's Houston office, succeeds Mr. Finuf as assistant general manager of sales. Mr. Pope joined Beaird in March, 1948 as a sales engineer in the Shreveport office, transferred to Houston in October, 1949 and later was named district manager. He was formerly associated with Texas Power & Light Company in Dallas.

Mr. Sims, who has been the compressor division sales engineer in Midland since he joined Beaird in November, 1955, has been advanced to Houston district sales manager, replacing Mr. Pope. Previously, Mr. Sims had been general manager of Mid State Mapping Service in Shreveport and an engineer for United Gas Pipeline.

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

ANNUAL REPORT SHOWS . . .

Sixteen States Increased Plant Food Use Despite General Decline in Consumption

The news that fertilizer tonnage fell off somewhat during the fiscal year ending June 30, 1956 comes as no particular surprise to many in the field who have been battling to keep volume on an upward curve. The annual USDA report, presented in full in this week's Croplife, tells an interesting story of the industry's sales efforts during the year past. It reflects the influence of reduced acreages, the attitude of farmers in some areas, and also the way weather affects the sale of plant food. Conditions of too little moisture in some areas, or just the reverse in others are in neither case conducive to optimum efforts to raise crops.

Significant points brought out in the report lie in the statistics covering the areas in which gains and losses were recorded for fertilizer consumption. Although the over all tonnage was down, it doesn't mean that this was true in every state. Far from it. Significant increases were registered in the East North Central region which comprises Ohio, Indiana, Illinois, Michigan and Wisconsin, in the West South Central region, comprising Arkansas, Louisiana, Oklahoma and Texas; and in the Pacific states of California, Oregon and Washington. In all, 16 states in various regions increased their consumption, which, in a year like the one just passed, is not so bad.

These sixteen states, which in the 1955-56 year accounted for 35.52% of U.S. consumption of fertilizer, chalked up an impressive gain of 587,222 tons which represented an increase of 7.45%. Obviously, the problem is to maintain this high consumption level in these states while trying to bring up the sales in other areas which have slipped. It's a big assignment.

Methods by which the industry can go about increasing its sales of plant food are of course many and varied. Plans must be geared to local conditions and operated in accordance with the needs of crops, weather and markets.

Speakers at the recent meeting of the National Plant Food Institute gave some very good advice along this line. A banker declared that American farmers are financially capable of tackling any project in which they are interested, and "as a whole, they could double their use of plant food." Credit-wise, he added, they could triple their present use of plant food.

With an equity of some \$151,300,000,000, the highest on record, the farmers of America can easily get loans from rural banks for the purchase of fertilizers, and this favorable balance sheet can be used by the fertilizer trade in formulating "the greatest merchandising program this industry has ever known."

Another speaker said estimates of various agricultural colleges indicate that fertilizer usage could be increased from 50% to 300%, and in some states, as much as 1,000%. But of course this will take selling.

The idea is to get more farmers to thinking along the line of the one who addressed the Institute convention. He said he had set up goals of 200 bu. an acre corn crops; 100 bu. oat crops; 60 bu. wheat crops and a 6 ton hay crop and fertilizes accordingly. He confirmed the statements made by many agricultural economists to the effect that the use of extra amounts of fertilizer brings down the unit cost of a crop, thus making more profit.

"We have a 55-acre field of corn that yielded

172.8 bu. an acre in 1954; 182.9 in 1955; and 167.8 bu. in 1956," he reported. He then added, "Our cost of production was 53¢ a bushel on the above field."

The more people who catch the meaning of this economic fact, the easier will be the job of increasing plant food consumption. Before the industry can achieve its full potential, this knowledge must be held by every grower in every part of the country. Naturally, there are always some who would never increase their fertilizer usage to any significant degree, but on the other hand, there are numerous others who will do so through the persistent efforts of the industry's sales organization.

Maps in sales offices throughout the plant food industry are likely to be adorned by pins of many colors denoting states and regions where fertilizer consumption rose and fell during the past fiscal year.

We suggest that the report, with its numerous statistical charts and tables, should be studied minutely to pick up hints of trends and possible changes within the marketing setup of the industry.

Attention to Safety Cuts Down Accidents

That emphasis on safety in fertilizer plants brings satisfactory results was illustrated in a report made at the recent meeting of the fertilizer safety section's executive committee at Richmond, Va. Wayne High of Baugh & Sons Company, Baltimore, in his report of progress made among the 174 companies participating in the safety competition contest, showed that a 43% decrease in accident frequency was achieved by these plants during the three-year period of the contest.

Of these firms, 71 came through with perfect records during the final 12-month period, it was reported.

The frequency rate for accidents of all kinds in the dry mixing plants of contestants went down 24% and other categories also turned in impressive scores. The percentages were based on a total of 30,308,000 manhours of work during the past 12 months.

Far beyond the mere posting of statistics on safety, the by-products of accident prevention are many and important. Every mishap avoided is a gain in itself, and to be able to operate a plant for months on end without accident is an achievement. There would be no point here in outlining the loss of production time involved in even minor injuries, as well as the out-of-pocket costs and the effect on employee morale, because every fertilizer plant executive knows that already.

The point is that the safety movement within the fertilizer industry has made notable progress in its seven years of active operation on a national scale. The companies who have associated themselves with the National Safety Council's program are particularly benefited, considerably beyond the modest cost of membership.

The overall impact of the safety program within the fertilizer industry will be even more potent, however, when more firms sign up as members. The high accident frequency rates of a few companies can keep the industry's compensation insurance premiums high to counteract the good effect of plants with favorable histories.



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

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MEETING MEMOS

July 12-13—North Central Division, American Phytopathological Society, University of Minnesota.

July 18—Ohio Agricultural Ammonia Assn., Everglades Restaurant, Columbus, Ohio, John Studer, Findlay Ice & Fuel Co., Findlay, Ohio, Secretary.

Oct. 3—New Jersey Fertilizer Conference, Rutgers University, New Brunswick, N.J.

EDITOR'S NOTE—The listings above are appearing in this column for the first time this week.

July 1-12—Summer Meetings, Georgia Plant Food Educational Society, July 1, E. O. Cabiness Farm, Oglethorpe County; July 9, A. O. Ewing Farm, Newton County; July 11, H. D. Burton Farm, Thomas County; July 12, Sam Neville Farm, Bulloch County; J. Fielding Reed, 710 Mortgage Guarantee Bldg., Atlanta 3, Ga., Secretary-Treasurer.

July 4-5—Alabama Seedsmen's Assn., Battle House, Mobile, Ala.

July 10-14—Plant Food Producers of Eastern Canada, Manoir Richelleu, Murray Bay, Quebec.

July 11-12—Great Plains Anhydrous Ammonia Meeting, Kansas State College, Manhattan, Kansas.

July 17-19—Southwestern Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

July 30-31—Fertilizer Meetings and Experiment Station Tours, Auburn, Ala. and Thorsby, Ala., Sponsored by the Alabama Agricultural Experiment Station and Alabama Soil Fertility Society.

Aug. 13-14—Ohio Pesticide Institute, Summer Meeting, Ohio Agricultural Experiment Station, Wooster, Ohio, J. D. Wilson, Ohio Agricultural Experiment Station, Secretary.

Aug. 14—Connecticut Agricultural Experiment Station Field Day, Mt. Carmel, Conn. Dr. James G. Horsfall, New Haven, director.

Aug. 28-31—Soil Conservation Society of America, Annual Convention, Asilomar, Cal.

Sept. 4-6—National Agricultural Chemicals Assn., Annual Meeting Essex & Sussex, Spring Lake, N. J., L. S. Hitchner, 1145 19th St. N.W., Washington 6, D. C., Executive Secretary.

Sept. 5-6—Great Lakes States Anhydrous Ammonia Meeting, Michigan State University, East Lansing, Mich.

Sept. 8-15—International Congress of Crop Protection, Hamburg, Germany.

Sept. 24-25—New England Fertilizer Conference, Bald Peak Colony Club, Melvin Village, N.H.

Oct. 2-4—Eleventh annual Beltwide Cotton Mechanization Conference, Shreveport, La.

Oct. 3-5—Pacific Northwest Plant Food Assn., Annual Convention, Sun Valley, Idaho, Leon S. Jackson, Lewis Bldg., Portland 4, Ore., Secretary.

Oct. 7-8—Western Agricultural Chemicals Assn., Fall Meeting, Villa Hotel, San Mateo, Cal., C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Oct. 14—Sixth Annual Sales Clinic of the Salesmen's Assn., American Chemical Society, Hotel Roosevelt, New York.

Oct. 17—Conference on Chemical Control Procedures for Industry

Chemical Control Analysts, Shoreham Hotel, Washington, D.C. Sponsored by National Plant Food Institute.

Oct. 18—Association of American Fertilizer Control Officials, (States Relations Committee, 8 p.m. Oct. 17), Shoreham Hotel, Washington, D.C., B. D. Cloaninger, Box 392, Clemson, S.C., Secretary-Treasurer.

Oct. 29-30—Seventh Annual Northwest Garden Supply Trade Show of Oregon Feed & Seed Dealers Assn., Portland, Ore. Masonic Temple.

Oct. 29-31—Entomological Society of Canada and Entomological Society of Alberta, Annual Meetings, Lethbridge, Alberta.

Oct. 31-Nov. 1—Second Annual Southern Fertilizer Conference and Second Annual Southern Soil Fertility Conference, Dinkler Plaza Hotel, Atlanta, Ga.

Nov. 3-5—California Fertilizer Assn. 34th Annual Convention, St. Francis Hotel, San Francisco. Sidney H. Bierly, General Manager, 475 Huntington Drive, San Marino 9, Cal.

Nov. 6-8—Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D.C.

Nov. 17-19—National Fertilizer Solutions Assn., Annual Convention, Netherland-Hilton Hotel, Cincinnati, Muriel F. Collie, 2217 Tribune Tower, Chicago 11, Ill.

Dec. 1-3—Southern Seedsmen's Assn., Jung Hotel, New Orleans.

Dec. 2-5—Entomological Society of America, 5th Annual Meeting, Hotel Peabody, Memphis, Tenn., R. H. Nelson, 1530 P St., N.W., Washington 5, D.C., Executive Secretary.

Dec. 2-5—Cotton States Branch, Entomological Society of America, 32nd Annual Meeting, Hotel Peabody, Memphis, Tenn., M. E. Merkl, Box 202, Leland, Miss., Secretary-Treasurer.

Dec. 9-12—Chemical Specialties Manufacturers Assn., Hollywood Beach Hotel, Hollywood, Fla.

Dec. 10-12—North Central Weed Control Conference, 14th Annual Meeting, Hotel Savory, Des Moines, Iowa. Lyle A. Derscheld, agronomy department, South Dakota State College, Brookings, Program Chairman.

Dec. 11-13—Agricultural Ammonia Institute, Seventh Annual Meeting, Hotel Marion, Little Rock, Ark., Jack F. Oriswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 12-13—Beltwide Cotton Production Conference, Hotel Peabody, Memphis, Tenn.

1958

Jan. 7-8—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 13-15, 1958—Weed Society of America and Southern Weed Conference, joint meeting, Peabody Hotel, Memphis, Tenn.

Jan. 21-23—California Weed Conference, San Jose, Cal.

Feb. 13-14—Agronomists-Industry Joint Meeting, Edgewater Beach Hotel, Chicago, sponsored by the Middle West Soil Improvement Committee, Z. H. Beers, 228 N. LaSalle St., Chicago 1, Ill., Executive Secretary.

March 4-5—Western Cotton Production Conference, Hotel Cortez, El Paso, Texas, Conference Sponsored by the National Cotton Council and the Five State Cotton Growers Assn.

July 18-19—Southwest Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

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TEXAS BULLETIN

COLLEGE STATION, TEXAS—The Texas Agricultural Experiment Station has published a bulletin on greenbugs and other small grain pests.

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